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RICHARD P. ROTHWELL, C.E., M.E., ROSSITER W. RAYMOND, Ph.D., M.E. } Editors.

**Cable address: "Rothwell," New York.**

Books for review, and all communications for the JOURNAL, should be addressed, Managing Editor, P.O. Box 1833, New York.

Communications for Mr. RAYMOND should be addressed to ROSSITER W. RAYMOND, P.O. Box 1465, New York. Articles written by Mr. RAYMOND will be signed thus * ; and only for articles so signed is he responsible.

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## THE RUSSIAN TECHNICAL EXHIBITION.

The Permanent Technical Exhibition of Saint Petersburg, which has been organized by the Technical Bureau of an important society of engineers, is now opened under the auspices of the Russian Government. It will certainly fulfill an important and useful mission, and is destined to supply a want long felt, not only by Russians themselves, but by all who are engaged in any of the industrial arts, and desire to open up relations with that vast but hitherto little known and unexploited country. It occupies the premises of the Association of Engineers of Ways and Communications on the Fontanka Quai, and its management has been intrusted to a committee presided over by M. SENDZIKOWSKI, a well-known mining engineer. On the programme which we have received it is stated, among other useful objects, that the institution will aim at affording support and encouragement to inventors, procure samples of every kind of natural or manufactured product, and assist all exhibitors by undertaking, when so desired, to effect the sale of their exhibits and enter into contracts on their account for further deliveries of their goods.

It thus throws open its doors with a cordial invitation to all inventors and manufacturers throughout the world, urges upon them the advisability of taking part in the undertaking, and requests them to send in at once all kinds of machinery, implements, lathes, apparatus, or instruments relating to, or used in, every branch of the engineering and mining professions. The agency for this country has been confided to the care of Mr. A. WARSCHAWSKY, at 14 Dey street, in this city, assisted by Mr. MADDAUS, and these gentlemen inform us that they will gladly answer all inquiries that may be addressed to them, and undertake the necessary preliminaries and arrangements for all parties desiring to take advantage of this opportunity.

## THE TORTILITA BUBBLE.

After our frequent warnings, and especially after our editorial exposure of this wild scheme in the ENGINEERING AND MINING JOURNAL of October 1st, it was to be expected that some of the papers that had been blowing the bubble would at last look into it. They have not done so; some of them even that knew the worthlessness of the enterprise, have endeavored to defend the swindle.

The New York *Herald*, apparently prompted by what we said, sent a correspondent, Mr. HAL SAYR, mining engineer, of Denver, Colo., to visit the mines, and he reports, under date October 11th, fully confirming the information we had already published and that contained in our well-informed expert correspondent's letter published on another page.

Though the information we published on October 1st and what we publish in this letter is quite sufficient to show the worthlessness of the Tortilita mines, we publish in our Mining News some extracts from Mr. SAYR'S report in the *Herald* of to-day, October 21st.

The *Herald* correspondent interviewed some of the workmen at the "great Tortilita mines," and received the following emphatic answers in the picturesque language of Arizona:

"Would you risk enough money in them from what you have seen to buy a new stamp mill?" asked the *Herald* man.

"Not by a d——d sight. There are abandoned mines all over Colorado to-day just as good as these mines. Look at it. The 'old man' (the superinteneent, has a force of thirteen men, all told—three to run the mill and nine Mexican miners to get out the ore under a foreman. The Mexicans work cheap and they are always in debt to the old man for supplies, on which he makes seventy-five per cent profit. Yet he has to scratch to pay expenses. The truth is there is no money in the mines for any body beyond expenses. The moment you go in for expensive machinery you are lost."

"Does the mine yield any dividends to the stockholders?" asked the *Herald* investigator.

"Dividends, h—l! The old man has got the bulge on the Eastern tenderfeet, but so far the mines produce nothing beyond paying for grub. Where do dividends come in?"

"What would you do if you owned these mines?" continued the *Herald* man.

"Light out before some bad man comes in here with a gun and cleans out the camp."

## LET US DEVELOP OUR EXPORT TRADE.

The extremely interesting letters which are now reaching us from our special correspondents in the Australian and South African gold-fields should receive the careful attention of our enterprising manufacturers and engineers, for they indicate some new regions which may offer an outlet for every description of American mining and milling machinery. The hackneyed cries of over-production, increasing competition, and lower prices so long dinned into our ears by our neighbors have commenced to find a somewhat boisterous echo among ourselves, and it is certain we must either seek abroad a similar market for our products to that which our own country has so generously and so long afforded to those of foreign nations, or must inevitably check, as too rapid, the progress which has hitherto characterized our advancement. Possessing, as we do, uncontested supremacy in mechanical skill and appliances, and an experience which has taught us the best appliances and processes for the mining and treatment of ores under the conditions which obtain in every new country, it is perfectly natural that those who have problems and conditions more or less similar to ours should seek here both the skill to conduct such work, and the appliances with which to do it. Hence we find a constantly growing demand for American machinery and methods and American experts. At the risk of expressing a mere truism, we may say that no mining country, however rich, can yield the results expected by our generation unless the fossilized methods which were sufficiently "go ahead" for our grandfathers are discarded for the newer appliances created by modern invention.

The small capitalist of to-day, who, thanks to that most wonderful of human discoveries—financial co-operation and limited liability—is able to venture his quota in the purchase of a bona-fide mine, expects the property, which he never sees, to be worked rapidly, thoroughly, economically and systematically. Destined to play but a passive rôle, he yet enters upon the undertaking with his eyes wide open, assures himself that ignorance, sloth, incompetency and rascality are absent from its surroundings, and is satisfied that he does not stake his all upon a question of good luck or ill chance, but attaches himself to a sound and remunerative business, conducted by members of a scientific, honorable and honored profession. He is taught to realize that every dollar saved in the exploitation represents so much per cent added to his own profits, and is, therefore, careful to choose a manager who appreciates the folly of employing manual labor in mine or mill, where by any chance it may be supplanted with advantage by machinery.

To pretend that none of these beneficial changes are due to other revolutionizing powers than our own, would be of course ridiculous; but no

one will deny that we have been foremost of the pioneers; that the practical improvements and labor-saving appliances have commenced with and have been copied from us; and that if we have not yet commenced to canvass the universe for patrons, our machinery and i s manufacturers are known and desired in every mining country.

This is well as far as it goes, but it does not go far enough. In the estimation of those who view us through the medium of our history, we are classed as an eminently enterprising nation, and, while in some respects this judgment is well founded, it must yet be admitted that, in many circumstances, we are far too conservative, and far too prone to think only of the present. Of our strong desire to "own the earth," no one can reasonably entertain a doubt; but it is equally true that we have a tendency, rather to rely upon our reputation to bring us customers, than to put our shoulders to the wheel and push our way to a more prominent position in the world's affairs. The letters of our correspondents, and especially those from the Transvaal, are opportune arrivals and serve as eloquent testimony of what is going on around us. They teach us that we are neglectful, by showing us that of more than $5,000,000 worth of mining machinery which within but a few months has been sent to South Africa, only an insignificant proportion comes from American workshops.

We can not help regarding this as a humiliating fact, nor could we restrain a feeling of discouragement at such a result of our unceasing labors to obtain the latest and best information from every quarter, if we were not sustained by the hope that having published the facts, we may soon chronicle the development of our commercial relations with these two new countries. We shall be pleased to afford those who desire them further particulars concerning the possibilities of opening up trade relations in the various foreign mining fields. Such firms as Messrs. Fraser & Becker, of the Transvaal, who are represented in this city by Mr. James Fraser, can give special information concerning the great South African gold-fields. It is especially gratifying to us that the Engineering and Mining Journal, through its widespread foreign circulation, has been the means of introducing American machinery and appliances in many distant fields, and it is constantly referred to for information which shows that these fields are ready to yield a fruitful harvest to those who are willing to cultivate them.

## CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

### The Tortilita Bubble.

Editor Engineering and Mining Journal:

Sir: I am interested in mining stocks and mines, and thank you for your exposition of that worthless bubble called "Tortilita Mine." Lucky it is that those interested in mining properties have one journal in this city fearless enough to expose such worthless schemes. Yours truly,

New York, October 17th. "Golddust."

Editor Engineering and Mining Journal:

Sir: I have just read the article entitled "How wildly ever strikes the fool" in the *Financial and Mining Record*. I would say in regard to this that in their speaking of the "Jessie Benton" mine as a good mine (fairly), they make an assertion which is strictly untrue. The "Jessie Benton" is at the surface one mass of old cuts, shafts, drifts, holes, etc., somewhat on the gopher plan, and has not been worked or touched for nearly *two years*, all the lower workings are full of water, and *no one* has seen the *bottom* for the above length of time. As for the mint bureau report we know that ninety per cent of their reports are practically untrue and none more so than the one they quote. What does a lot of assays signify. It is poor material this for supporting their position. In addition, I may state that Mr. Elmore left the Tortilita outfit and took the position of superintendent of the Reymert mines early in 1886, and was there some four or five months. Meanwhile, at the Tortilita the mill was idle, his foreman working a few men on the mines. Elmore did not receive pay for his services at the Reymert mines until four or five months ago, when he paid his foreman something on account (he owed him over $2500), also his amalgamator, to whom he owed over $900, and he also paid up some other little debts and took Mr. Rodney Price and set sail for the East, where the Tortilita Company was finally organized and set afloat. Further, during the time Elmore was East his men went to California on a visit. Thus the mine and mill were shut down over two months this last summer. When I was there I counted eight men sorting over old dumps. Their team was hauling tailings from below the mill back again above the ore floor; and this is what they are doing now, working and culling over all the old dumps.

It is the claim of the officers of the company, that: "While a large supply of ore was in sight averaging $50, etc., etc.," quoted by the *Financial and Mining Record*, which sticks. This is an *extravagant* claim for ore, especially when you have not a ton in sight. As for the "Desert" and other mines (the Benton I have spoken of), no work has been done on any of them for over a year, and there is not, it is safe to say, 10 pounds in sight. All the work the last year or so has been done on the "By Chance," and that has not furnished ore enough to keep five stamps running in the *day* time, nor silver enough to pay the three white men Elmore has in his employ, *i. e.*, foreman, amalgamator and engineer, the balance being Mexicans. You will have the Tortilitas *down fine* now, and have no fear but that every word of this is strictly true. H.

Casa Granda, Ariz., Oct. 13, 1887.

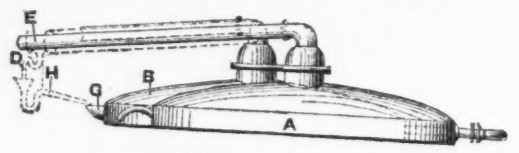
## THE DEVELOPMENT OF THE AMERICAN CHEMICAL INDUSTRY.*

By Dr. Francis Wyatt.

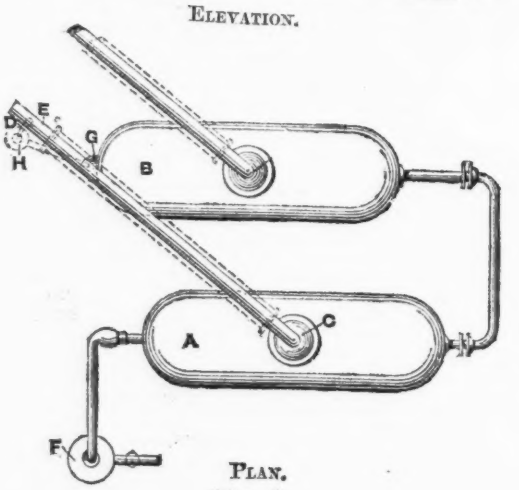
(*Continued from Page 274.*)

### PLATINUM STILLS.

In a work like the present, undertaken with the sole object of conveying the most recent practical information to practical men, we realize that it would be out of place to attempt even a brief history of all the forms of platinum apparatus that have been used for concentrating purposes since the commencement of the century. We shall consequently content ourselves with remarking that, while stills of this metal have never given any thing like satisfaction generally considered, they are the only means thus far applied that have stood the test of time, in competing with glass. Apart from their excessively high cost, they have the great disadvantage of being liable to rapid deterioration under the influence of even minute percentages of nitrogen, or of iron and kindred impurities, and hence it is seldom possible where pyrites, and especially smalls, are the source of sulphur, to use them in connection with a Glover tower, because the acid that flows from it invariably contains ferric sulphate. So long as this acid is sufficiently diluted, the iron remains in solution and thus passes unnoticed into many compounds, where its presence induces no important chemical disturbance; but as soon as the liquid is subjected to concentration and the water driven off, the iron becomes insoluble, and falling to the bottom of the pans or stills, forms a crust which promotes their rapid destruction. Many plans have been tried in order to overcome this serious obstacle and so bring the Glover tower and platinum stills into harmonious working order, but none seem to have met with any success; even that of Gerstenhœfer, which consists in suspending in the still by means of platinum wires a large and very porous porcelain vessel, where, thanks to the boiling movements of the contents, all the impurities are collected and retained, having been pronounced impracticable. It is, therefore, necessary to directly concentrate the acid from the lead chambers, and for this purpose, speaking from our own experience, the most convenient form of still hitherto introduced is that designed some years ago by Mr. Gustave Delplace, and shown in the accompanying illustration, fig. 4. The chamber acid first runs into a series of six lead pans with a heating surface of some 350 square feet, and fired from the top by gas generators, where, by maintaining a temperature of from 380 degrees to 390 degrees Fahrenheit, it is raised to a minimum of 60 degrees Beaumé. *A* and *B* in the plan, and elevation, are two connected platinum boilers; the acid from the pans flows into *B*, which also receives the distillate from *A*, where the concentration is carried up to 66 degrees B. *C* is the head and condensing arm of *A*, having an outlet at *D* for the strong distillate, the weak, uncondensed vapors being allowed to pass forward and escape at *E*. The boiler *B* is provided with a corresponding head and condensing arm. *F* is the flask cooler to receive the concentrated oil of vitriol from the boiler *A*, and *G* is a cup at the end of the boiler *B*, which receives, by means of a pipe *H*, the condensed distillate from the boiler *A* as well as the acid from the lead pans. A connection pipe is fixed between the two boilers, through which the acid continuously passes from *B* to *A*, while another connection pipe leads from the boiler *A* to the cooler *F*. The boiler *B* is placed at a level a few inches higher than *A*. The distillate from the latter should attain a specific gravity of 1·76 to 1·78, and being condensed in the arm, passes thence into the boiler *B* for reconcentration. To make an ordinary commercial oil of vitriol containing only 74 to 76 per cent of sulphuric anhydride from acid which enters the apparatus at 60° B., the distillate should not have a greater specific gravity than from 1·04 to 1·12, whereas, when the pure monohydrate is required, it should attain to at least 1·76. The value of this apparatus is estimated at about $15,000; it is capable of concentrating 10 tons of sulphuric acid per day, and it possesses the undeniable advantage, even when working to the highest attainable degree of concentration, of allowing no ferric sulphate to collect at the outlet tube.




Elevation.




Plan.

Fig. 4.

Fig. 5 illustrates an excellent platinum still, designed and patented by Kalbfleisch, of London, and adopted in many European works. *A* is a

* Copyright by the Scientific Publishing Company, 1887.

shallow box, with bottom and sides of sheet-iron, its top being made of steel plate set in asbestos mortar, or some other equally good non-conductor of heat. It carries a shallow lead pan *B*, into which the heated acid from *C* runs through a siphon *F* to a depth not exceeding one quarter of an inch. The heating is done with superheated steam, thus avoiding the overheating of the pan by direct exposure to the fire, and permitting the use of comparatively thin sheet-lead. The superfluous steam passes through *G* and gives a preliminary heating to the acid in *C*, after

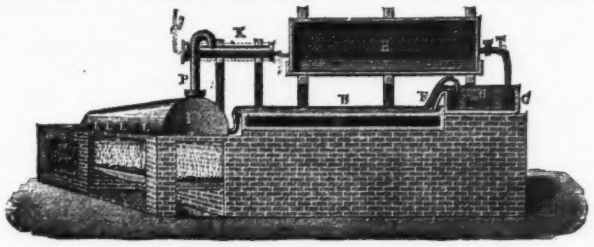


Fig. 5.

which it is either utilized for heating the feed waters of the steam boilers or made to pass into the lead chambers through *T*.

The condenser *K* is connected with the platinum still *I* by an upright pipe *P*, and discharges its acid immediately into the lead chamber *H*. Behind the platinum vessel the fire is in contact with pipes for overheating the steam; this being controlled by a pyrometer. The platinum vessel is rectangular, with an oval cover, slanting backward, because, the vessel being fed with acid in front over the outlet pipe *P*, most vapors are given off there. The whole bottom is exposed directly to the fire, and is supported internally by the cross girders *L*, soldered to the bottom and sides, and dividing the space into compartments, at the bottom of which the acid communicates and runs off concentrated at *M*. The outlet pipe is bent for a hydraulic lute, the bend determining the level of the acid, which is drawn off from the bottom as usual, and allowed to run into the cooler. An apparatus of this kind is said only to cost $7000, and it is claimed that it will produce between seven and eight tons of the monohydrate per day of twenty-four hours, with a maximum expenditure of 7 per cent of coals.

One of the most important factors to be studied in connection with the concentration of acid in platinum stills is that having reference to the solubility of the metal. A great deal of thoughtful research and experiment have been devoted to this detail by Scheurer-Kestner, who long since demonstrated that even when the acid is perfectly free from any impurities (the last trace of nitrogen compounds having been removed by the use of ammonium sulphate as described), the loss of platinum can not be calculated at less than a minimum of 2 grammes for every ton of acid. In order to remedy the defect, he conceived the idea of making the stills from an alloy of iridium with platinum, but it was soon discovered by those who followed his suggestions, that whereas pure platinum is extremely tough, malleable, and easily welded and repaired, the platino-iridium alloy is remarkably hard and dangerously brittle, and the consequent frequent and inevitable breakages, make its use quite as onerous in the long run as that of platinum alone. The system was, therefore, abandoned as impracticable, because, as it loses in one direction what it saves in another, it really offers no substantial economy.

We have lately seen it urged that these very unfortunate results were exceptional, that they have not been generally confirmed, that they were obtained by experiments in an old-fashioned still, and that since the introduction of the more shallow vessels by Delplace and others, the loss, if any, has become insignificant, owing to the lower boiling point necessitated by the smaller depth of acid. We are, however, very far from concurring in this view, our own experience having conclusively shown that the source of loss, even if less than the figures given above, is certainly constant and never by any chance lower than 50 cents per ton of the mono-hydrate produced.

### GLASS RETORTS.

Previous to the development of the platinum industry there were no other practical means of concentration at the disposal of acid manufacturers than glass retorts, and glass-making not having at that time advanced to its present stage of excellence, we can readily imagine that the operation was not only a costly one, but that it possessed a very strong element of danger. The retorts were generally set in galley furnaces in a long double row, each vessel being put into a metal pot lined with loose sand. There was, however, always an immense amount of breakage, chiefly caused by the admittance of sudden draughts from without, which, playing upon the intensely hot glass, caused it to crack or burst, the workmen being compelled in each case to immediately leave the apartment to avoid suffocation by the densely irritating vapors.

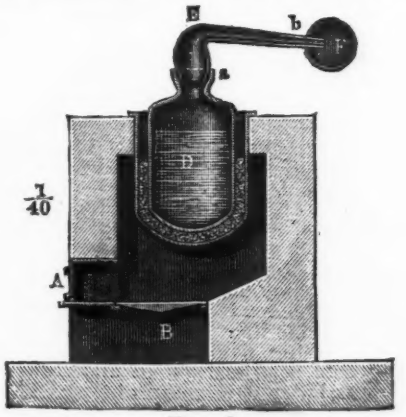



Fig. 6.

To-day, however, most of these drawbacks have disappeared, and it may fairly be said that, in England, concentration in glass retorts again promises to come to the front, and finally altogether supersede platinum, owing to the excellence and cheapness of the best lead glass. The vessels are very carefully blown, and very slowly cooled; are of perfectly even thickness, weighing each one about 60 pounds, and costing from 25 to 30 cents per pound.

The working order in which they are now arranged, and the shape of the glass vessels themselves, are accurately illustrated in fig. 6. *A* is a small fire door, *B* the grate, *C* a metal pot serving as a sandbath, and very useful in preventing the acid from running over into the fire in case of breakage. *D* is the retort itself, and it will be observed that it is not merely resting on sand at the bottom, as many people have erroneously supposed, but that it is entirely surrounded by it up to the level reached by the acid at the end of the operation. The retorts are divided into two parts, one being the bottle shaped *D*, ending in the top of the neck *a*, and the other being the head *E*, which very much resembles the small retorts we use in the laboratory, deprived of their bottoms. This head is loosely set into the neck *a*, and enters at its other end *b* an aperture in the wide lead pipe *F*, running all along the retort house.

The concentration is carried on in sheds, where the temperature is kept constantly at from 75 degrees to 85 degrees F., and provided with tight-fitting windows and double doors, only one of which is opened at a time, the other being shut in order that no draught may enter. Each shed contains some 30 to 50 retorts. In the pipe *F*, which conveys the condensed acid to a collecting tank, there is always more or less suction from the chimney, and the joints at *a* and *b* need not, therefore, be luted by any cement, since as no air is allowed to enter, no vapor can by any means get out. This enables the head *F* to be put on and taken off very simply and without the least trouble. Each retort is furnished with its own fireplace, and is about 2 feet 9 inches in height and 1 foot 6 inches in diameter, with a capacity of from 25 to 30 gallons, and yields about 350 pounds of concentrated oil of vitriol at each operation. In many works the daily distillation is allowed to proceed for 12 hours, and the acid, having been allowed to cool over night, is drawn off each morning after lifting the head *F* by siphons of platinum tubing with very narrow orifices.

A lead pipe is frequently laid down all along the retorts, with openings for each of them, into which the acid runs from the siphons to be conducted either into a lead cooler, or directly into carboys or iron drums ready for use or shipment. Above the retorts is another lead pipe, by means of which fresh quantities of hot acid are run into the retorts directly from the Glover tower.

From what has preceded it will be apparent that, with the exercise of sufficient care and skill in the various stages of the manipulations, there is no necessity for much loss by breakage; that the method, unlike that of platinum, is specially favorable to the concentration of the Glover tower acid; and that in addition to this, it offers the by no means insignificant advantage to the workmen, of marking, by a visible loss of color, the progress of the concentration.

(TO BE CONTINUED.)

## MANUFACTURE OF STEEL IN THE BASIC OPEN-HEARTH.*

By J. W. Wailes.

The great inventions for the production of steel on a large scale, known by the honored names of Bessemer and Siemens, have now worn themselves into their bearings, and each has taken its special place in the world. They can hardly now be looked upon in the light of "rival processes," and, though the line that divides the special field of operations of each may be broad, and somewhat of the nature of a belt of debatable ground, still the main uses of both are now sufficiently indicated and more or less understood. Doubtless local circumstances have something to do with marking out the ground; but, making allowances for this, the two processes have found their proper places. These remarks apply to the acid mode of treatment. In England basic working has been chiefly confined to the Bessemer converter. In the production of that class of material known as "mild steel" the open-hearth process has undoubtedly taken the most prominent position. The reason for this are matters of common knowledge with most makers and users of steel. The protracted nature of the open-hearth operation affords ample time for careful investigation as the charge is in progress; but perhaps a more potent reason than any, and the one that has drawn the line more absolutely than any other, is that where, as in soft steel, the operation of oxidation has of necessity to be pushed to an extreme limit, and a copious supply of oxidizing medium produced, it is better to supply this oxidizing medium in its natural and unreduced condition than reoxidize iron that has been already reduced at the cost of fuel and labor. I say nothing of the effect of extreme oxidation by pneumatic means. These remarks only touch on the verge of a very great question. The Bessemer basic process has certainly stepped a good deal over the borderland which divides the two acid processes, and has wandered far into the field of the open-hearth acid process. Whether it will retain that position, or will find again a rival or a friend in the basic open-hearth, time will perhaps best determine. My own impression is that the line of demarcation, broad or narrow, will again be clearly drawn, and the basic open-hearth will find its own special sphere, and that a very large and important one. In treating the subject before us, it is obvious that a very wide question is opened, and one with many side issues of great importance—issues that may each form ample and profitable matter for special investigation. It is, however, my purpose simply to describe as well as I can general points, and not to follow any particular branch, however interesting. For convenience I will divide my remarks under three principal heads, viz., description of the apparatus, process, and *modus operandi*, and a few remarks on the quality, etc., of the material produced. For the sake of brevity I will call them Plant, Process, and Produce.

*Plant.*—The special form of apparatus now before you, known as the "Batho" furnace, is a modified form of the Siemens furnace, specially designed with a view to ultimate basic working. Generally described,

*A paper read at the recent Manchester meeting of the British Iron and Steel Institute.

it consists of separate parts, taking the form of independent regenerative stoves and combustion-chamber, or melting-vessel, the two connected by tubes, the leading idea being to get the melting-vessel into as compact and manageable a form as possible. A few words will be sufficient to describe the regenerative stoves. The advantage of making each of these independent and self-contained will be at once obvious. As it is necessary to heat these and the bricks contained in them rapidly, and to convey this heat to the combustion-chamber, consequent expansion and contraction of the structure, which is an unavoidable condition, is rendered as small an objection as possible both to the stoves themselves and the vessel they are connected with. The plan has other very important advantages, such as simplicity of construction, absolute freedom from the serious objection that often obtains where the regenerative chambers are constructed in the same block of brickwork, viz., that of cracking, and allowing a destructive mixture of gas and air. A door is provided from top to bottom of the stove; the greatest possible facility is thus afforded for cleaning and changing the internal brickwork. Having separated the melting-chamber from all other parts of the apparatus, we are in a position to deal with the very delicate material composing the basic lining without other difficulties having to be contended with. It is in the melting-chamber where the whole trouble connected with the basic open-hearth process centers; and I think it will be obvious that this melting-vessel is made of a form affording the greatest opportunity for repairing or replacing the lining that can possibly be desired. I take it that the ultimate end to be aimed at in all machinery or mechanical appliance is that of simplicity. The drawing submitted showed various views of a furnace for small charges, up to, say, seven tons. In this vessel the lid is suspended from girders placed above, and carried on runners, and is easily removed after being lifted a few inches by means of the screws by which it is suspended.

The lid is of silica bricks inclosed in a strong ring. The lid being removed, the lining of the vessel may be repaired or replaced as may be found desirable. I will now direct your attention to a second drawing. This is the form of melting chamber decided upon after due trial and consideration. In the smaller furnace there is an objection. It is necessary to remove the lid whilst it is hot, and in this condition it easily warps. No doubt this could be in a great measure obviated by making the ring very strong, but the plan shown for the larger furnace offers every advantage. A point of great value in the Batho furnace is that the roof, being carried independently of the sides, the latter can be removed altogether or in part without disturbing the roof. This has been found in the case of silica-lined furnaces a very great convenience, the sides being often entirely replaced, bit by bit, without turning off the gas. The sides, up to the top of the door and gas-port are of basic material. The upper part, about 1 foot 6 inches in depth, is of silica brick, is in sections held in frames, hinged, and readily opens to give access to the interior of the vessel should repairs become necessary. The natural slope of the sides will allow repairs to be made by simply putting basic lining material on the slope from the outside. Duplicate sections may be kept ready or changed at any time without causing delay. For the 12-ton vessel about 3000 basic bricks, 11 inches by 4½ inches by 3 inches, placed as shown, would be required. For the movable sections, with that part over the gas-port and doorway, 2000 ordinary silica bricks, and for the lid about 3000 more, making for the lining of the vessel 5000 silica bricks—a total weight of basic material amounting to about 15 tons is used. This material, when crushed and mixed and rammed into a mold, weighs about 150 pounds per cubic foot. The acid bricks forming the top of gas ports and doorway are turned as a flat arch between substantial supports. The hinged sections do not rest on the basic lining. The joint between the lid and the upper part of the sections can be very easily made with the help of a little siliceous clay; that between the sections and the basic lining with a little carbon (retort carbon) and lime mixed with tar. I would here state this general principle; that basic and acid material may come together in the lining of a melting vessel without causing difficulty, provided the one does not rest or impose weight on the other, the *rationale* of this being that the heat acting on the joint destroys contact. If, however, the contact is maintained by pressure, rapid fusing is the natural result.

*Process.*—The material composing the basic part of the lining is prepared and treated in the same manner as that for the Bessemer converter. For that part above the slag-line, however, an admixture of silica sand to the extent of 8 or 10 per cent. may be used with marked advantage. In the smaller vessels shown, where the side walls are carried to the top, I use fine wire cuttings mixed with the basic composition, to prevent the material cracking and falling away, much as hair is used in plaster. In the large furnace this device is not necessary, the walls being lower and possessing a natural slope. The silica part of the furnace lining having been built in and dried, the basic portion may be quickly introduced. The most convenient and economical way of doing this is in the form of bricks. I have found 11 inches × 4½ inches × 3 inches a very good size to deal with. These bricks are produced by hydraulic pressure, equal to about 150 tons applied on 11 inches × 4½ inches of face. Great expenditure of power, moreover, is not necessary, a ton pressure being sufficient to pack the material in the mold, and the final squeeze is easily given by a few strokes of a pump working directly on the ram. The bricks are conveyed at once from the press and placed in the furnace, a very simple operation, requiring only careful ordinary labor. As soon as the lining is complete, gas may be turned on, and full heat obtained as quickly as possible. It is here where the great advantage of this particular form of furnace is apparent. The necessary process of slow annealing in ordinary furnaces is of no consequence in this arrangement. The hearth may be charged on as soon as the full heat is obtained, and in this particular the basic-lined furnace has a great advantage over the acid, where the greater part of a week is required to fuse in a new hearth. A basic-lined hearth having been obtained, a basic slag must always be kept in working. The composition of the iron to be treated will, of course, determine the amount of oxidizing base necessary. I have always adopted the plan of charging a large part of the ore and lime in the bottom of the furnace, and the charge on that. Every manager will, doubtless, establish his own particular mode of treatment. One general point must be observed, however, and that is that the purifying agent should be created as early as possible in the working of the charge. Perhaps a practical point of the greatest importance is that of preserving the bottom and keeping it in working order. In the case of an acid furnace, dry silica sand is used to repair local damage at the slag-line or below the charge: it is placed on the sides of the hearth, and allowed to run down into the bottom, forming a neat slope. Exactly the same thing is done with a basic hearth, the only difference being that the material used is dolomite, either shrunk or in its raw condition. If slight repairs only should be requisite, raw stone will answer well. If of a more extensive nature, it may be necessary to have the stone, in its "shrunk-lime" form, crushed moderately fine; but in either case a percentage of silica sand must be used as a flux—8 to 12 per cent. And just as in the acid furnace a flux is mixed with too refractory silica sand and gradually diminished in quantity as the working pace is reached, so in the same way may the flux be diminished in the dolomite. Rapid working means the rapid production of heat. A furnace may melt slowly and then gradually attain a very full heat, but this does not necessarily mean quick working or economy of fuel; it proves that the furnace is capable of reaching a very high heat, but that slowly. What appears necessary to produce rapid action is a large supply of gas and air and a tolerably strong chimney-draught, so that abundant volumes of flame may be brought to bear on the charge in its earliest stage, and it may be gradually reduced when the charge is melted, when, also, the gas and air may be reversed at more frequent intervals. Any desired size of gas and air port may be used in the combustion-chamber under discussion, and any degree or nature of combustion is simply a question of mechanical detail.

*Produce.*—If it is a fact that the basic converter possesses advantages over the acid converter for the production of mild steel, I would say that the basic open-hearth possesses the same advantage over the acid open-hearth, and—save for the presence of eminent open-hearth steel makers—in a more marked degree. I have refrained from placing before you any tables of reactions during the working of a charge—(1) Because it would be outside the scope of this paper; (2) Because such questions come more within the province of a chemist than an engineer. When I state, however, that a cinder pig iron, containing 1·5 per cent of sulphur and 3·75 per cent of phosphorus, worked with 20 per cent of ordinary steel or iron scrap, can be converted into good mild steel, the effect of an oxidizing base applied to metal under high heat may be imagined. I do not for one moment wish to be understood as expressing approval of this highly fortified compound, or as asserting that it is desirable. On the contrary, sulphur is the greatest enemy the open-hearth steel melter has to contend with; the following are samples of this steel:

TABLE NO. 1.

| Description. | Dimen. of test-piece. | | Breaking strain. | Extension. | | | Fractured area. | | | Elastic limit. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Dia. | Area. | Per square inch. | Limit. Inches. | Inches. | Per cent. | Dimensions. | Area. | Per cent. | On piece. | Sq. in. |
| ¾-inch round "steel." | | | Tons. | | | | Dia. | | | Tons. | Tons. |
| No. 1.... .... | ·68 | ·363 | 23·27 | 8 | 2·3 | 28·75 | ·36 | ·1017 | 71·98 | 5·7 | 15·7 |
| No. 2..... .... | ·685 | ·368 | 23·5 | 8 | 2·37 | 29·63 | ·4 | ·1256 | 65·86 | 5·7 | 15·48 |
| No. 3..... .... | ·685 | ·368 | 23·36 | 8 | 2·42 | 30·25 | ·37 | ·1075 | 70·78 | 5·8 | 15·76 |
| No. 4..... .... | ·685 | ·368 | 23·23 | 8 | 2·35 | 29·57 | ·375 | ·1104 | 70·0 | 5·6 | 15·21 |

From the following analysis it will be seen that the sulphur is high:

TABLE NO. 2.

| ¾-inch round bars. | Mn. | S. | Si. | P. |
|---|---|---|---|---|
| No. 1 ..... ..... | ·45 | ·09 | trace | ·02 |
| No. 2 ... .. ..... ..... | ·55 | ·08 | .... | ·02 |
| No. 3..... ... ..... ..... | ·34 | ·07 | .... | ·024 |
| No. 4 ..... ... | ·30 | ·08 | .... | ·028 |

I am indebted to Mr. James Riley for the trouble his assistants have taken in checking and verifying these analyses. Samples and tests might be multiplied without end, but I hardly think it will be necessary to do more than name a few points. I am not considering the process from any other point of view than as a means of purifying phosphoric cinder iron. The lowest note that is possible in the known practical processes of purifying iron is certainly struck by the open-hearth basic means. By the lowest I mean as regards tensile strength, but certainly the highest as regards reduction of area. I have not made use of the term elongation, as this is somewhat uncertain in this very soft metal—the effect of strain being apt to localize itself; and, indeed, it behaves very much in the same manner as pure iron dealt with in the President's able address last May. Indications are strong in the direction of the purest form of iron having its origin in the basic open-hearth, when afterward alloyed to meet desired ends. It is, however, with the pure or purest outcome that I would now deal. One of the most striking features of dead soft basic open-hearth metal is that local disturbance does not communicate itself through the structure; bars after being nicked with a sharp tool bend, and a piece of punched plate is evidently unimpaired by the operation. By general observation we often gather information not easily obtainable by more precise means. As a rough example of this: The sapient operator who conducts the working of that necessary, but most unprofitable, machine known as the "skull-breaker," complained that he "could do nothing with the pieces that came from the new furnaces;" they would bend and bulge under fierce impact, and become very hot. This latter development he ascribed to something of a peculiar chemical nature contained in the metal—phosphorus and sulphur, most likely. Having by some inscrutable mental process connected these ideas with lucifer matches and heat, he further reported his firm conviction that the most violent individual effort of the supreme power of darkness would prove utterly futile. I am not prepared to endorse this last sentiment, and present it with my apology, as an evidence of the toughness of the metal in its rough-cast condition. Even when mixed with the like material from acid furnaces working soft charges it was easily detected. It is not always expedient to carry the process of purification to the limit represented by 22 tons tensile strain. Such efforts are sometimes misunderstood by engineers; but the President of this Institute was very near the mark when he named the low tensile strain as the measure of purity. It follows, of course, that

mechanical change has its minimum effect on this metal, and this characteristic should find for it large favor with the manufacturers of ordnance.

*Boilers, etc.*—When, through the strenuous efforts of Mr. James Riley (then manager of the Landore-Siemens Steel Works, soft steel was first produced for the construction of the *Iris* and *Mercury*, I, as engineer of those works, have a pretty vivid recollection of the testing and selection of that very fine material; but I can not help speculating on what the effect might have been of a dozen charges at the onset of a character now readily produced by basic open-hearth treatment. On looking back over this short paper, I am impressed with the scant amount of information I have been able to place before you, and am forced to the conclusion that basic difficulties are small matters to write about. The process is, besides, a very simple one, depending for its success on very simple points.

In making comparisons of the various processes in the manufacture of iron, conclusions do not appear easy to arrive at, as a comparison between the Bessemer basic process and puddling necessitates an intimate practical knowledge of both; and as the open-hearth acid process only deals with a particular class of raw iron, comparison becomes again difficult; but as between puddling and the open-hearth basic process two means of dealing with the same material are placed side by side, and they are of so like a nature in their form and operation that a comparison becomes no longer difficult. If the special form of apparatus that has been described should tend to remove or lighten the inhuman load of puddling, those who have contributed to its development, namely, Messrs. Hackney, Batho, Riley, Dick, and myself, will be rewarded, at any rate with a feeling of sincere satisfaction.

## A HISTORY OF THE "SLIDING SCALE" SYSTEM OF "PROFIT SHARING" IN THE PENNSYLVANIA COAL MINES.—II.

(*Continued from Page 275.*)

On December 29th, 1869, at a meeting held at Tremont, Pa., the Anthracite Board of Trade offered the following terms for 1870:

"*Resolved*, That hereafter the basis shall be fixed at $2 per ton at Port Carbon, and wages, whilst coal brings that rate, shall be—

| | |
|---|---|
| Outside labor | $7.50 per week. |
| Inside " | 8.50 " |
| Miners | 10.50 " |

"The contract work to be reduced from the present $3 basis forty per cent.

"The advance in wages as the price of coal advances shall be as follows: When the average of all sizes from lump to chestnut (both inclusive) reaches $2.50, five per cent; $3, ten per cent; $3.25, fourteen per cent; $3.50, seventeen per cent; $3.75, twenty-one per cent; $4, twenty-five per cent, and further advances in the same proportion; and in all cases costs must be paid by the parties using the same.

"These prices to be obtained from the average of actual sales as shown by the books of five operators."

This proposition was rejected and the collieries represented in the Association stopped work.

On January 17th, the restrictions imposed by the W. B. A. were so far withdrawn as to allow those to work who thought proper to do so.

On February 18th, 1870, new terms were offered by the Anthracite Board of Trade on a basis to be fixed at $2.50 per ton at Port Carbon; outside labor to be $9 per week; inside labor to be $10 per week; miner's wages to be $12 per week, clear of expenses. Contract work to be reduced 30 per cent below present prices. Labor to receive 20 per cent advance on coal."

The workingmen still adhering to the claim for the $3 basis as a *minimum*, a general suspension began with the month of April and lasted until August, 1870.

Through the instrumentality of Mr. F. B. Gowen, President of the Philadelphia & Reading Railroad Company, the following terms (known as the "Gowen Compromise") were offered by the men July 22d, and finally accepted by the operators on learning that a number of operators had given orders to start:

"That we, members of the W. B. A., do offer our employers of Schuylkill County to start on the basis of 1869 when coal is worth $3 per ton at Port Carbon.

"That, when coal brings $3.25, we demand eight and one-quarter per cent of an advance; $3.75, twenty-four and three-quarters per cent advance; $4, thirty-three per cent advance.

"That, when coal falls below the basis of 1869, say $2.75, we accept a reduction of eight and one-quarter per cent; $2.25, twenty-four and three quarters per cent; $2, thirty-three per cent, and nothing lower.

"That any miners working on contract after they start, earning over $100 per month, be reduced ten per cent; $125 and over, twenty per cent; $150 and over, thirty per cent; $200 per month, if there be any, forty per cent.

"That the above figures be taken from six grades of coal, pea coal not included." JNO. SINEY, President.

GEO. CORBETT, Secretary.

The following supplementary agreement was afterward made by the committees:

Agreement made at Pottsville this 29th of July, 1870, between the committee of the Anthracite Board of Trade and the committee of the Workingmen's Benevolent Association.

It is agreed that the W. B. A. shall not sustain any man who is discharged for incompetency, bad workmanship, bad conduct, or other good cause, and that the operators shall not discharge any man or officer for actions imposed upon him by the W. B. A. It is further agreed that the spirit and intention of the resolution (called the equalization resolution) passed by the W. B. A. is that each man shall work regularly, and it is the place of the bosses and operators to see that he does.

The resolution is, that any miner earning above expenses, over one hundred dollars and less than one hundred and twenty-five dollars, shall be reduced ten per cent on the basis; earning over one hundred and twenty-five dollars and under one hundred and fifty dollars, shall be reduced twenty per cent on the basis; earning over one hundred and fifty dollars and under two hundred dollars to be reduced thirty per cent on the basis: earning over two hundred dollars to be reduced forty per cent on the basis.

For obtaining the price of coal monthly, the president of the Anthracite Board of Trade and the president of the W. B. A. of Schuylkill County shall meet on the 20th day of each month and select five operators, who shall, on the 25th inst. following, produce a statement, sworn or affirmed to, of the prices of coal at Port Carbon for all sizes above pea coal.

The five operators shall be selected from a list of those shipping over 40,000 tons annually, and none shall be selected a second time until the list is exhausted. The prices of coal so obtained shall fix the rate of wages for that month; and this agreement in regard to the mode of obtaining prices shall remain in force during the year 1870.

| *Operators.* | *W. B. A.* |
|---|---|
| WM. KENDRICK, | JOHN SINEY, |
| J. K. SIGFRIED, | GEORGE CORBETT, |
| M. P. FOWLER, | GEORGE ATHEY, |
| SAM'L E. GRISCOM, | JAMES BARRY, |
| BAIRD SNYDER. | ROB'T WEIGHTMAN. |

Under these terms, which continued in force for the year, the average prices per ton at Port Carbon, exclusive of pea coal, rates of payment, and weekly wages were as follows:

| 1870. | Average price at Port Carbon. | Scale of wages. | Wages paid per week. Miners. | Inside labor. | Outside labor. |
|---|---|---|---|---|---|
| August | $2.85½ | 8¼ per cent reduction | $12.85 | $11.01 | $10.09 |
| September | 2.44⅜ | 16½ " " | 11.69 | 10.02 | 9.19 |
| October | 2.50⅝ | 16½ " " | 11.69 | 10.02 | 9.19 |
| November | 2.27⅒ | 24¾ " " | 10.54 | 9.03 | 8.28 |
| December | 2.17 | 24¾ " " | 10.54 | 9.03 | 8.28 |
| Averages | 2.45 | | 11.46⅕ | 9.82⅕ | 9.00 |

(TO BE CONTINUED.)

## TRUTH AND JUSTICE VS. STRIKES.

Address of P. M. Arthur, Chief of the Locomotive Engineers.

The twenty-fourth annual Grand International Convention of the Brotherhood of Locomotive Engineers was held in Chicago on the 19th inst., with delegates present from all parts of the Union. The Grand Chief Engineer, P. M. Arthur, with his usual rare good sense, said in the course of his annual address: "We are enemies only to wrong in its various devices and garbs, and can assuredly say that political schemes and aspirations have no place nor part in our association. A mighty army of men, representing 365 divisions, has gathered about a nucleus of 12 men who, 24 years ago, assembled in the city of Detroit and started an organization destined to be more than they knew or dreamed. To-day we number 25,000 men, and while our numbers are great we would not have you consider only the quantity, but the quality as well. To be a brotherhood man, four things are requisite, namely: Sobriety, truth, justice and morality. This is our motto, and upon this precept have we based our practice. We have paid out during the fiscal year just closed to widows and orphans, $259,500, making a total of $2,244,669.61 that we have paid since the association was established. Our *Journal's* circulation has now reached 22,000; from which we derive a revenue of $8,922.84 per year. Taking all things into consideration, our relations, both to ourselves and with various railroads employing brotherhood men, are amicable. When we consider the dissatisfaction which is everywhere manifest about us our few troubles pale in insignificance. There have been times and incidents when the 'strike' was the only court of appeals for the workingman, and the evil lay in the abuse of them and not in the use of them. The methods used to bring about a successful termination of strikes, the abuse of property and even of persons have brought the very name into disrepute, while the troubles of the laboring man are receiving mere cant, and sympathy for him is dying out. More and more clearly defined is the line becoming which divides the honest man, satisfied with a just remuneration which he has truly earned, until by his own effort he can rise to a higher position in life, and the loud voiced 'bomb thrower,' who, scarcely able to speak the English language, seeks to win his own comfortable living from those who have worked for it, presuming upon the imagination and arousing false hopes in the hearts of those who are still more ignorant than himself. Among sensible men the day for all this is past. Let 'mercy season justice, and justice be tempered with moderation.' A wise arbitration looks to a long result rather than to immediate satisfaction, and accomplishes more than intimidation ever can hope to do.

"It is not my intention," said Mr. Arthur, "to impose upon this convention any dogma upon the drink question; but I cannot refrain in honesty to my own convictions from deploring the sad havoc that intemperance is making in the ranks of our fellowmen. So great is this evil that no man or woman who is striving to improve their fellows can help taking it into account. It is, indeed, an important factor for evil in our midst. Not only from the physical and moral standpoint is it working mischief, but from the standpoint of labor. The man who has so little self-control that he cannot resist the temptation to degrade himself is always in danger of bringing disgrace upon his brethren. He has lost his self-respect, and, to some extent, his independence, thus making an easier victim to the greed of a selfish employer. I would therefore urge upon you the necessity of abstaining from everything that will in the slightest degree impair your usefulness as citizens or your efficiency as locomotive engineers."

## PROGRESS OF THE NEW SOUTH WALES MINING INDUSTRY.

By John Henderson.

Special Correspondence of the Engineering and Mining Journal.

It is scarcely creditable to the energy and business ability of the Department of Mines of New South Wales that its report for the year 1886 should only have been published within the last few days. Although an elaborate document, much of its value is lost by such delay, which unfortunately occurs year after year. Such has been the recent progress in some branches of mining industry, that the information given corresponds but slightly with much that is now available from private sources. As an authoritative summary of what was done during the year, it is, however, of much value, and a brief résumé of its contents will be of interest to your readers, indicating as it does the large and growing field which this colony affords for the use of improved plant and machinery of all kinds for mining purposes.

There was an increase during the year in the applications for the lease of auriferous land, which, however, was counterbalanced by a decrease in the area of other mineral land taken up, especially with a view to mining for silver, which is a comparatively new industry here, but one that promises to assume very large proportions, if we may judge from the results that have been achieved in the Barrier ranges, of which I gave you some particulars in a former letter. The great successes that were gained at the Sunny Corner silver mines in 1885, led to a great rush for silver-bearing land, but it was soon found that there were great and unforeseen difficulties in dealing with many of the ores that were discovered; in addition to which, through carelessness in underground work, some of the mines collapsed, many shareholders were great sufferers, and silver shares were almost a drug in the market. As advantage is now being taken of experience gained elsewhere, especially in the Western States of America, these difficulties are being overcome, and large salaries are being paid to men competent to deal with the refractory ores that are frequently met with.

The total value, since returns were first compiled, up to the end of 1886, of the mineral products of New South Wales has been close upon £70,000,000, the estimate for 1886 being £2,928,000, as compared with £2,875,000 in 1885. This increase was mainly due to the larger output of silver, silver-lead ore, kerosene shale, and the advance in the price of tin. On the other hand, there was a decrease in the yield of gold, copper, iron and coal. The value of the silver-lead ore exported in 1886 was nearly three times as great as that in 1885, which was partly due to increased production, but also to the difficulty above referred to of successfully treating many of the silver ores with the appliances then in use here. The produce of our silver mines exceeded that of 1885 by nearly a quarter of a million sterling, and will be very much larger for the present year, the yield of the Broken Hill mine alone being expected to reach about £400,000. I may mention, in passing, that the shares of this company, upon which £19 has been paid up, are now selling at £180.

The output of gold was 101,416 ounces, against 103,736 ounces in 1885, the number of miners engaged being 6767, of whom 867 were Chinese, who are looked on with great disfavor by the Europeans. The yield of silver was 1,015,433 ounces, against 794,173 ounces in 1885. Although there was a rise in the value of tin, the quantity produced was rather less than in the previous year, being 4967 tons, against 5192 tons in 1885. Copper, for the opposite reason, showed a considerable decrease, having fallen from 5746 tons in 1885 to 4026 tons in 1886. The balance was restored by silver-lead bullion, of which the output was 4802 tons, valued at £294,485, against 2286 tons, valued at £107,626, in 1885. Owing to the depression in trade, there was a reduction of 50,000 tons in the quantity of coal raised, the amount being 2,878,863 tons, against 2,830,175 tons in 1885. During the last few years this branch of mining has been very rapidly developed, as will be seen by the following particulars, which form part of the report referred to:

VALUE OF MINERALS RAISED IN NEW SOUTH WALES.

| | 1881. | 1886. |
|---|---|---|
| Gold | £566,513 | £366,294 |
| Silver | 13,026 | 197,544 |
| Silver-lead | 1,625 | 294,485 |
| Tin | 724,003 | 467,653 |
| Coal | 603,248 | 1,303,164 |
| Shale | 40,748 | 99,976 |
| Total | £1,949,163 | £2,729,116 |

These figures, showing an increase in six years of above 160 per cent, must be regarded as very satisfactory.

The diamond drill was used extensively in boring for coal during the year, and was successful in the discovery of good seams in six places, with an aggregate thickness of 182 feet 8 inches. Although the coal measures of this colony are of enormous extent, only 66 mines were at work during the year. There were 72 accidents, only 29 of which proved fatal. In this respect the report will compare favorably with that which will be made for the present year, which will have to record the most extensive accident that has yet occurred in our coal mines—that at Bulli—in which 80 men and boys perished by an explosion of fire-damp.

There seems to be every reason to expect a return of that intense interest in mining matters which prevailed here some twelve or fifteen years ago. Speculation was at that time carried to such an extreme that the whole community were more or less seized with the mania, and as clever rogues were not averse to starting bogus companies, seeing that there was such a demand for shares of any kind and at any price, large sums of money changed hands before the bubble burst, and there were few who came out of the excitement without the firm determination never to be misled again by any mining prospectus, however specious. It is owing to this unfortunate experiment that enterprise has been so largely withdrawn from this field, notwithstanding the fact that practical as well as scientific men are thoroughly agreed as to the almost illimitable wealth of the colony in minerals of all kinds. Signs, however, are multiplying that our gradually accumulating capital will find an outlet for itself in this direction. One of our practical miners, formerly Minister of Public Works, has been discussing in the papers the question of a probable mining boom, and expresses the opinion that there is sufficient justification for a revival of confidence in mining, if it be carried on with the same amount of prudence usually applied to other commercial transactions. From the experience he has gathered by personal observation, this gentleman honestly believes that our silver age is at its dawning. He does not think the country is strewn with "Broken Hills," but has no doubt that zones of silver-bearing country will be found from one end of New South Wales to the other, while but little is to be traced in Victoria, where nature has been more generous with respect to gold.

His letter appears to have had considerable effect in stimulating the market for mining shares, which within the last day or two have been remarkably brisk, a large amount of business having been done at advancing prices. Among the suggestions that have resulted from it is one that has met with a good deal of support, viz., that a government board should be formed for the examination of mining managers, many of whom are said to be shamefully ignorant both of the theory and practice of their profession, with the natural consequence not only of great loss to the shareholders who put their trust in them, but of weakening the interest that ought to be taken in the development of our large mineral resources. Considering the field open for private enterprise in this direction it is surprising that so little systematic and well-directed energy is shown in the matter, seeing that mining, if properly conducted, is not more precarious or uncertain than many other things in which large amounts of capital are cheerfully invested.

Sydney, New South Wales, Australia.

**No Timber for Charcoal.**—Acting Secretary Muldrow has approved the action of Commissioner Sparks in declining to amend the circular of the Department of the Interior issued in August, 1886, in relation to cutting timber on the public domain, so as to permit the taking of burned and dead timber and the pinion pine from lands other than mineral, wherewith to make charcoal for the use of the smelting furnaces. The case came up on the petition of A. C. Dake and others, representing the charcoal manufacturers of Colorado, who stated in a printed brief, prepared by Samuel B. Berry, their attorney, that those smelters employing the "water-jacket" process must shut down and thousands of workmen be thrown out of employment, unless the dead timber and pinion pine were allowed to be burned for charcoal, and used at the Denver, Leadville and other Colorado furnaces.

**The Production of Tin Plates.**—The *Revue Industrielle*, of Paris, gives some statistics showing that the tin plate industry is now consuming 460,000 tons of English iron and steel a year that would be useless for the same purposes if it were not coated with tin.

In 1885, there were 96 tin plate works, with 320 rolling machines, and the mean production of each machine was 96 barrels per day. During this same year the production was 7,130,000 barrels, 5,230,000 of which were for exportation.

The manufacture of fruit and meat cans is enormous. Three million barrels give 875,000,000 of these. It is due to them that the entire world receives from the far West, salmon from the Oregon, mutton from the plains of Australia, fruits of all sorts from California, lobsters from Massachusetts and Nova Scotia, oysters and peaches from Baltimore, sardines and green peas from France, pineapples from the Mauritius Islands, apricots from Lisbon, milk from Switzerland, preserves from Tasmania, and a host of other products from foreign climes. These boxes have become a necessity to modern civilization.

**The Mechanical Equivalent of Heat.**—In the mechanical section of the late Manchester meeting of the British Association Messrs. Cowper and Anderson submitted the results of a very extensive series of experiments undertaken by them to determine the mechanical equivalent of heat. These experiments give an interesting and almost exact confirmation of those of Doctor Joule. The principle adopted was to have an apparatus always in a normal state, and using a large amount of power, viz., about 5 horse-power, and of course producing a large amount of hot water, viz., about a gallon a minute raised about 20 degrees Fahr. The machine used to absorb power and produce heat was one of the late Mr. Froude's dynamometers, and the way in which any loss of heat to the surrounding air was avoided was by letting the hot water run into a small tank that inclosed the dynamometer, and so surround the machine with water of its own temperature; this hot water then ran into another larger tank outside the first one, and so surrounded it with hot water, and its temperature was kept to the same as the issuing hot water from the machine by a small steam pipe. The outer tank was of thick wood, and had three coats of hair felt outside. The result obtained on a three hours' trial was 769 as the mechanical equivalent of heat; it will be remembered that Professor Joule's last experiments gave 772 as the equivalent.

**The Strauss Colliery Cage Props.**—When a pit cage is drawn to bank, it is ordinarily lowered on to a set of catches or props which automatically give way to allow it to pass upwards, but fall into position again as soon as it has passed. On these it rests while the full tub is pulled off and an empty one run on. The weight must be lifted off before the props can be disengaged by the hand lever, so as to allow the cage to be lowered. This process must be repeated for each deck, in the case of a cage with two or more decks to be discharged at a single level without any upper unloading stage, no matter whether the upper or lower deck is discharged first. It generally happens that the cage at bottom is loaded and waiting before that at the top is ready to be lowered, and it is to accelerate the movement of the latter that this system is proposed. The catches are somewhat in the form of short bolts, resting on a steel bar or frame, the upper surface of which has an inclination of about 9 degrees. These bolts are hinged so as to give way to the upward passage of the cage, and connected to the hand-lever by a sort of toggle-joint which locks them into position, so that the weight of the cage applied on their upper surface can not possibly force or slide them back, while, owing to the inclined surface on which they rest, they can be easily withdrawn by the lever without the necessity of first lifting the cage. The maneuvering of the cage is conducted as follows: (1) completely raised; (2) lowered until the bottom deck rests on the props; (3) the props are withdrawn and the cage lowered until the upper deck comes on to the props; (4) the props are finally withdrawn, and the cage lowered away, the engine having only been reversed once.

Many advantages are claimed by the inventor for this apparatus, but we have no space for a criticism, and must be content with this brief description.

## THE SOUTH AFRICAN GOLD-FIELDS.

From Our Special Correspondent.

The South African gold-fields grow in importance daily, for there is not a day passes without new gold reefs being discovered. During the last month gold was exported to the value of £40,000 from this locality alone, and from the few works that were opened up last year £134,000 worth of gold was registered. This is the export of gold made known, but the digging population have an idea that it is policy on their part to keep their gold finds as secret as possible. My first letter to you was simply a preliminary letter written with a view to give your readers a general idea of the gold industry as it at present exists, and the nature of the country in which it is carried on. I now propose to send you details so that your readers may be well informed of the progress the industry is making.

I may commence by telling you that the discovery of gold has already added about 20,000 to the population of the country, and the government of the South African Republic, which was languishing through want of revenue, has become the richest government in South Africa. There has been a very large amount of machinery brought into the country, at the lowest estimate to the value of £1,000,000, but the proportion erected does not exceed one third, and but few batteries are yet at work; so that the output of gold can not, of course, as yet give to the outside world any thing like a fair idea of these gold-fields. There will be by the end of the year at least 750 stamps at work in the Witwatersrand alone, and at Barberton it may be calculated that there will be 500 more, so that the export of gold for 1888 may be fairly expected to be very large indeed.

The largest works here have 100-stamp batteries. There are but two of these at present, and but one of them really at work. The other will start operations next week. The former is that of the Driefontein (Knight's) Company, and the latter belongs to the De Pass Gold Mining Company. Knight's battery is worked by two 60 horse-power engines with four 30 horse-power boilers. The engines are by Roberg & Jordan, the machinery Jordan & Sons, English manufacturers. Each five stamps supplied with amalgamators, with copper plates attached and water connection for Frue vanners. The machinery is built into four walls of massive stone blocks, 5 feet in thickness, which rest upon or rather are built into a bed o solid rock. Three of the walls are 9 feet high and the fourth 12 feet 6 inches. There are bonding stones across the walls 6 feet in length. The dumping platform is supported by dry walls 170 feet by 80 feet. The whole of the machinery is inclosed in an iron building of 170 feet by 140 feet. The residences for workman are all of stone masonry, and the ore is brought from the mines over tram lines worked by steam. The works are to be lighted at night by electric lights to enable the working to be carried on by night as well as by day. The capital of this company is £200,000, and the prospects of the company are such that the £10 shares have gone up to £25. This rise in the price of shares is by no means singularly large. The £1 shares of the Sheba Company have reached £32. This company paid 60 per cent at the end of its first three months' work. The Wemmer Company £1 shares are quoted at £6 10s. The company is taking out 10 to 13 ounces per ton with a 10-stamp battery. The company's claims are situated on what is known as the main reef, and within ten minutes walk of the town of Johannesberg. This reef can be traced with great distinctness along a line of between 50 and 60 miles in length. Among the companies whose properties or portions of properties are on this reef, are the Roodeport, the Morning Star, the Vera, the South African Gold Mining Company, Whitehead's, O'Meara & Wodehouse's, the Wemmer, Wemmer Extension, Salisbury, Royal, Grahamstown, City & Suburban, Charlton & Meyers', Nicholson Bros.', Jubilee, Wolhater's, Spes Bona, Metropolitan, Tarkastadd, Beatrice, Ridgway's, H. Nourse's, Nigels, Jumpers, Beckett & Marks', Gildenberg's, Stanhope, Rosebud, Jack's Concession, Primrose, Moss Rose, May, Knight's, Kleinfontein and Vlackfontein. The shares of all these companies are at a premium.

The most remarkable part of the gold industry that has come under my notice is at Turffontein, about a quarter of an hour's ride from the town of Johannesberg. I went out to see Turffoutein a few days since, and there I saw two white men and two native boys at work, each man taking out two ounces per diem with no other apparatus for crushing than an iron pestle and mortar. The way they work is to set the native boys to crush the ore in the mortar and sift it through a fine wire seive into a tin pan. The white men then throw some quicksilver into the pan and set about panning out the stuff. When they find that the mercury has absorbed the gold they throw the mercury into a pickle bottle and afterward retort it with a heated shovel. These men in one week sent through the Natal branch bank for sale at Natal, £300 worth of gold obtained in this way.

These gold-fields cover a vast amount of country. They run a length of at least 600 miles over the line of country between Kimberly and Delagoa Bay. I prefer giving you the names of well-known points on the map to figures, as it will enable readers to trace the gold-fields with more readiness. They take in Klerksdorf, Potchefstrom, Witwatersrand, Barberton and Swazuland, in one direction, in another Zoutsfeanberg, the Waterberg and Malmain, then Hidelberg and surrounding country. As yet no large amount of alluvial deposits have been found. One man, by name Fuller, is taking from a pocket at Roodeport 10 ounces per diem, and has been doing so for some two months, but outside his claims no one can find any amount of gold worth mentioning. De Pass has alluvial deposits on his property, and has taken out some very fine nuggets; but he has been devoting his attention to his banket reefs, and has left his alluvial deposits to lie until he has his machinery erected and at work.

There has been some machinery imported into the gold-fields, of American manufacture, but not a great deal. The chief portion of it has been sent out from Chicago firms. The importation of machinery is very costly, as it has to be brought over such long distances of bad roads. The distance of the Barberton gold-fields from Capetown, the principal port town of Cape Colony, is over 1300 miles; from Algoa Bay and East London it is about the same distance. Capetown has the best landing facilities, and as the Capetown & Kimberly (Diamond Fields) railway runs half the distance, and the railway runs close to the Table Bay docks, where the ships are discharged, there is less risk and greater dispatch in getting machinery by that route. The distance from Natal is less than from Capetown, but then there is the coast line to be got over, and that means transhipping cargo, besides which the difficulty of landing cargo at Natal increases the risk.

Johannesberg, South Africa, Sept. 10, 1887.

**Blast-Furnace Slag.**—In an article upon the utilization of this substance which appeared in the Engineering and Mining Journal of October 1st, we made the following statement in regard to Mr. Elbers's inventions: "*The first result of his researches was the conversion of slag into slag wool or 'mineral wool.'*" This might be construed to imply that Mr. Elbers is the inventor of mineral wool, whereas we intended merely to say that he is the "originator" of the mineral wool industry in this country, the discovery itself having been fully described by him in various papers some ten years ago.

**Use of the Magnet in Paper Manufacture.**—During the manufacture of paper, as soon as the pulping machines exhibit signs of wear it is not uncommon for a good deal of paper to be spoilt by the abrasion of minute specks of iron which fall into the pulp and afterwards produce rust stains. Occasionally the stains do not appear until the paper has been damped for printing, and a good deal of annoyance is thus caused. The *Papier Zeitung* announces that this difficulty may be overcome by the use of magnets in a very simple and effectual manner. A kind of steel comb with broad teeth set edgewise is placed in the stream of pulp and water which issues from the machine. The teeth are made of magnetized steel strips, and any iron particles contained in the pulp are thus withdrawn.

## BOOKS RECEIVED.

[**In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price! These notices do not supersede review in another part of the Journal.**]

*The Relative Proportions of the Steam-Engine.* By William Dennis Marks, Ph.B., C.E., Professor of Dynamical Engineering at the University of Pennsylvania, Philadelphia. Published by J. B. Lippincott & Co., Philadelphia. 1887. Third edition revised and enlarged. Pages 295 and Index. Illustrated. Price, $3.

*Elementary Treatise on Analytical Mechanics.* By William G. Peck, Ph.D., LL.D., Professor of Mathematics, Mechanics, and Astronomy at the Columbia College, New York. Published by A. S. Barnes & Co., New York. 1887. Pages 319 and Index. Illustrated. Price, $1.65.

*Fish and Fisheries Report, 1885. Part XIII.* By the U. S. Commissioner of Fish and Fisheries. Published by the Government. Washington. 1887. Pages 1099 and Index. Illustrated.

*Sutro Tunnel: Report on the Sutro Tunnel Company and the Sutro Tunnel.* By Theodore Sutro, Attorney, Counsellor, etc., for the Sutro Tunnel Company. Published by the Company. 1887. Pages 198 and Index. Illustrated.

## PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

PATENTS GRANTED OCTOBER 18TH, 1887.

371,542. Spiral Conveyor. Hans Birkholz, Milwaukee, Wis., Assignor to Edward P. Allis & Co., same place.
371,559. Electric Meter. Richard N. Dyer, East Orange, N. J.
371,568. Dumping Mechanism for Hoisting Apparatus. Wm. H. Ewing, Port Royal, Pa., Assignor of one half to Daniel McGarry, and Jerome B. Zerbe, both of Cleveland, Ohio.
371,573. Oil-Well Riz. William Forgie, Washington, Pa.
371,582. Foundry Apparatus. Joseph M. Hays, Akron, Ohio, Assignor to Lewis Miller, same place.
371,584. Rail-Splice for Railways. William H. Hoffman, Jerseyville, Ill.
371,592. Miners' Combination-Box. Jas. H. Kirby and George Fraser, Coal Valley, W. Va.
371,653. Apparatus for Measuring the Carbonic Acid Gas in the Atmosphere. Adolf Wolpert, Nuremberg, Bavaria, Germany.
371,655. Electro-Magnetic Brake Apparatus. Granville T. Woods, Cincinnati, Ohio, Assignor to the Woods Electric Company, same place.
371,672. Rock-Drill Clamp. George R. Cullingworth, New York, N. Y.
371,675. Rotary Engine. Fred. E. Decker, Arnot, N. Y.
371,679. Method of and Tool for Drilling Rock. George M. Githens, Brooklyn, N. Y.
371,686. Hydraulic Dredging Machine. Byron C. Howell, New York, N. Y.
371,688. Railroad Joint. S. Andral Kilmer, Binghamton, N. Y.
371,711. Hydraulic Concentrator. Frederick W. Robinson, San Francisco, Cal., Assignor to L. L. Robinson, same place.
371,719. Ingot for the Manufacture of Compound Metallic Tubes. Theodore S. Very, Boston, Mass.
371,744. Method of Testing Chains. Wm. D. Ewart, Chicago, Ill., Assignor to the Ewart Manufacturing Company, of Illinois.
371,775. Compound for Cleaning Boilers. Joseph Mast, Philadelphia, Pa.
371,782. Pipe-Joint for Gas-Mains. John Norton and Samuel Briggs, McKeesport, Assignors to Edmund C. Converse, Allegheny City, Pa.
371,784. Hydro-Carbon Furnace. Orland D. Orvis, Chicago, Ill.
371,787. Pipe-Joint for Gas-Mains. Wm. H. Richards, McKeesport, Assignor to Edmund C. Converse, Allegheny City, Pa.
371,793 Gas-Engine. Albert Schmid, Allegheny, and J. Chas. Beckfeld, Reserve, Allegheny City, Pa.
371,794. Receiver for Natural Gas Wells. Thomas Shelton, McKeesport, Pa., Assignor to the National Tube Works Company, same place.
371,800. Rock-Drilling Machine. John C. Stevens, Port Chester, N. Y., Assignor to Nathan C. Pond, Marshall O. West and Ernest Simons, all of same place.
371,801. Dredger. Andrew K. Stone, Boston, Mass.
371,808. Joint for Lead Covered Cables. Richard B. Waring, Pittsburg, Pa.
371,809. Multiple-Effect Apparatus. Frank J. Weiss, Basle, Switzerland, Assignor of one half to the Sangerhausen Actien-Maschinenfabrik and Eisengiesserei, vorm, Hornung and Rabe, Sangerhausen, Germany.
371,810. Gas Plant. Samuel T. Wellman and George Goetz, Cleveland, O., Assignors to the Fuel Gas and Electric Engineering Company, Lt., same place.
371,820. Pattern for Molding. Joseph J. Carr, Wilkes-Barre, Pa.
371,833, 371,834. Device for Welding Tubing. John H. Flagler, New York, N. Y.
371,835. Tube-Rolling Mill. John H. Flagler, New York, N. Y.
371,849. Petroleum Motor. Victor List and Jacob Kosakoff, Moscow, Russia, Assignors of one half to George A. List, same place.
371,682. Chair for Railroad Rails. McLeod W. Thomson, Altoona, Pa.
371,872. Boiler Furnace. Isaac Bowe, Chicago, Ill., Assignor of one half to George A. Gindele, same place.
371,885. Machine for Dressing Stone. Wm. T. Harvey, Baltimore, Md., Assignor of one half to Robert B. Pumphrey, same place.
371,890. Coal Dump. Thomas B. Jackson and Marshall P. Lytton, Macon City, Mo.
371,896. Preventing Incrustation. Wm. B. Moore, Chicago, Ill., Assignor to Judson E. Wright, same place.
371,907. Ingot Mold. Samuel R. Wilson, Broken Hill, Assignor to Reginald Bradford Pell and Jas. MacCabe, both of Silverton, New South Wales.

# THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page 279.*)

Percy was unable, either by Karsten's method or otherwise, to obtain a decided alloy of lead and iron. Lead added by Billings to molten ingot iron completely volatilized, traces only remaining.[a] Metallic lead usually contains a minute quantity of iron.

The lead of plumbiferous iron ores separates in the blast-furnace hearth from the cast-iron, carrying with it any silver present, and thus sometimes forming an important bye-product.

Titanium, a metal so oxidizable that it decomposes boiling water, often occurs in gray cast-iron,[b] existing at least in part as carbide, much as suspected by Riley in 1872. (See § 13). It has been found in spiegeleisen; it is said to occur rarely or never in other white cast-iron, but the complete absence of graphite from the very titaniferous cast-iron quoted below strongly suggests whiteness. Nor is it found in commercial wrought-iron and steel, for it is inevitably oxidized along with the other electro-positive elements of the cast-iron from which they are made: indeed it can probably only be introduced into any malleable variety of iron (except possibly the most highly carburetted steels) by a *tour de force*, nor is there reason to believe that if introduced it would be beneficial. It is indeed possible, though apparently extremely difficult, to obtain titaniferous steel by melting titanic acid and iron or iron oxide with charcoal in crucibles: Sefström[c] thus obtained a very hard but malleable iron with 4·78% of titanium: it may even be questioned whether this metal did not closely approach cast-iron. Though many competent chemists have sought it, I find no other record of its detection in wrought-iron or steel. A titaniferous "plate iron"[e] quoted by A. H. Allen turns out to be nothing but cast-iron, probably white or nearly white, containing

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Combined carbon | 2·70 | Silicon | 1·09 | Sulphur | ·086 | Manganese | 1·37 |
| Graphite | tr | Titanium | 4·15 | Phosphorus | ·081 | Iron | 90·58 |

Faraday and Stodart stated that though their crucibles sufficed for fusing rhodium and (imperfectly) platinum, they could not bear the temperature needed for reducing titanium.[f] In an undoubted sample of Mushet's "Titanic steel" which I obtained personally from the maker's American agents, and which was stamped as such, neither Shimer nor H. L. Wells could detect titanium, though they have made its determination a special study.[g]

Percy[h] states that chemists of skill and repute have failed to find titanium in "titanic steel": and later Riley,[i] Greenwood[j] and others have found this steel free from titanium.

§ 146. A. Arsenic behaves towards iron much as sulphur does.

Combination.—They unite readily and in all proportions. Iron heated in contact with alkaline arsenite and charcoal, or arsenious acid and nitrogenous animal matter, acquires an arsenical case-hardening. Ordinary cast-iron occasionally contains small unimportant quantities of arsenic: but non-European irons have occasionally contained large quantities. Thus Berthier found 9·8% (with 1·5% carbon) and 27% (with 1% carbon) in cannon-balls from Algiers, free from sulphur, manganese, copper and silicon. The former was easily pulverized; the latter, still more fragile, could be split diametrically, revealing a fracture like that of marcasite nodules.[k] Percy found 16·2% arsenic in a cannon-ball from Sinope.[l]

In roasting mispickel-bearing ores the arsenic is expelled in large part, but not completely, as part forms non-volatile arsenate of iron, which is reduced in the blast-furnace. Simple heating to whiteness does not completely expel arsenic. It is not known whether arsenic can be scorified by other metals as sulphur is by manganese in iron-smelting. Even the violently oxidizing conditions of the basic Bessemer process do not always completely remove arsenic, for Ledebur found ·013% of it in a basic rail.[m]

Parry found that hot iron readily absorbed vapor of arsenic, which it retained on heating in vacuo. Iron behaves in the same way towards phosphorus, but after absorbing vapors of zinc, cobalt and certain other metals it again evolves them on heating in vacuo. Riley, however, observed a strong smell of arsenic on working arsenical steel, which indicates that his metal, unlike Parry's, evolves its arsenic at least in part when heated.[n]

Effects.—Arsenic appears to lower the saturation point for carbon: to give iron a white fracture, to destroy its power of welding, and make it redshort and sometimes brittle at higher temperatures: a larger proportion of arsenic renders iron coldshort also. We have few quantitative data as to its effects: Lundin's analyses, too scanty to build on, indicate that in wrought-iron they begin to be serious at some point between ·045 and ·09%. Here are his results.[o]

| Arsenic. | Sulphur. | | Quality of the wrought-iron. |
|---|---|---|---|
| | By silver plate. | By barium chloride. | |
| ·09% | 0·03% | 0·042% | Very unforgeable. |
| ·045 | 0·015 | 0·022 | The best in every respect. |

Here the amount of sulphur is too trifling to have caused redshortness. Riley reports that steel so arsenical as to smell strongly of this metal when forged, yet worked pretty well, but was brittle and useless.[p] The wrought-iron of Alais, rendered unweldable by arsenic, has been successfully made into open-hearth steel.[q]

B. Antimony unites with iron readily, and probably in all proportions; even a minute quantity of it makes iron hard and both red- and cold-short. Fortunately it is not often present in iron ores. It is not wholly removed in the manufacture of wrought-iron, nor on exposing antimony-bearing iron to a steel-melting heat. Of 1% of antimony added by Karsten to cast-iron in the charcoal hearth, the bar-iron produced contained ·23%.[r] Of 1% added by G. H. Billings[s] to almost pure molten ingot-iron, enough remained after 20 minutes' exposure to a steel-melting heat to ruin the metal.

* Copyright by the Scientific Publishing Company, 1887.

a Trans. Am. Inst. Mining Engineers, V., p. 454, 1877.

b Riley, Journ. Chem. Soc., 1872, XXV., p. 552: Journ. Iron and St. Inst., 1880, I., p. 190.

c Ledebur, Handbuch der Eisenhüttenkunde, p. 265.

d Journ. Iron and St. Inst., 1880, I., p. 190.

e Iron and St. Inst., 1880, I., p. 190: A. H. Allen, private communication, May 23d, 1887.

f Phil. Trans. Royal Society, 1822, p. 254.

g Private communications, P. W. Shimer and H. L. Wells, April 7th and May 14th, 1887. Wells states that his method (by hydrogen peroxide) would probably detect ·01 and would certainly detect ·02% of titanium.

h Iron and Steel, p. 158.

i Chem. Journ. Chem. Soc., XVI., p. 387; 1872, XXV., p. 562.

j Steel and Iron, p. 396.

k Annales des Mines, 3rd Ser., XI., 1837, p. 501.

l Percy, Iron and Steel, p. 76.

m Stahl und Eisen, 1884, IV., p. 640.

n Compare § 145 A. Journ. Iron and St. Inst., 1874, I., pp. 96, 97, 101.

o Stahl und Eisen, 1884, p. 485, from Jernkontorets Ann., 1884, II.

p Journ. Iron and Steel Inst., 1874, I., p. 101.

q Idem, 1885, I., p. 272.

r Percy, Iron and Steel, p. 169.

s Trans. Am. Inst. Mining Engrs., 1887, V., p. 458.

Karsten's weld iron with ·23% antimony was extremely red- and cold-short: another bar iron, in which he found ·114% of antimony, was worthless. Billings' antimonial iron was decidedly cold-short, and so redshort that it crumbled to pieces whether hammered or rolled.

C. Bismuth.—Of 1% of this metal added by Karsten to cast-iron while being refined in the charcoal hearth, ·081% was retained by the bar iron: its sole effect was to make the iron work "raw."[a] Of 0·5% added by Billings to molten ingot iron only traces remained in the solidified metal, which was decidedly red-short. It contained ·08% of carbon.[b] Hot iron absorbs vapor of bismuth, evolving it when heated in vacuo.[c]

D. Vanadium occurs occasionally in cast-iron, in which Riley[d] has found 0·686% of it; Sefström discovered it in the bar-iron and refinery slags from the Taberg (Swedish) ores.[e] I know no data concerning its influence.

According to Witz and Osmond[f] it concentrates in certain slags, notably in those the basic Bessemer process; these taken collectively contain quantities of this rare metal, whose recovery they propose.

§ 147. Molybdenum produces with iron alloys analogous to those of iron with tungsten, according to Berthier, one with 2% of molybdenum being fusible, extremely hard and brittle, but tenacious:[g] yet Billings found that 1% of this metal rendered good iron extremely redshort and utterly worthless.[h] Some Mansfeld copper-smelting salamanders consist chiefly of iron-molybdenum alloys; as much as 28·49% of molybdenum is reported in them.[i]

§ 148. Nickel and Cobalt are frequently present in cast-iron, though rarely if ever in important amount, and are retained when it is converted into wrought-iron and steel.

A. Nickel alloys with iron readily and probably in all proportions: meteoric iron usually contains from 1 to 20% of it.[j] The largest amount which I have met in a commercial iron is ·35%, which, together with ·11% cobalt and ·31% copper, had no traceable effect on the weld iron which contained it, unless, as Holley pointed out, it counteracted the copper present: for the metal welded well. (See § 142.)

Effects.—Nickel appears to make iron redshort: in certain proportions and under certain conditions, both undefined, it appears to make it brittle. Billings[k] found an alloy with ·66% nickel and ·72% carbon redshort; and one with ·732 nickel and ·07 carbon very redshort, the difference being attributed to its lower carbon content: both were forgeable at higher temperature: one with 6% nickel and but little carbon was extremely redshort. These alloys were almost absolutely free from elements other than those here mentioned.

The following proportions of nickel have been found in iron: **0·35%**[l]: 0·66%[m]: 1%[n]: **3%**,[o] as malleable as pure iron: 5%[n]: **6%**,[m] almost as ductile and tenacious as pure iron: **6·36%**[p]: **7** to **8%**[p]: **7·87%**[p]: **8·21%**[p]: 8·3%,[q] semi-ductile: 10%[d] more brittle than pure iron. The irons whose proportion of nickel is here given in heavy faced type are ductile, the rest appear to be at least comparatively brittle. The influence of nickel appears to be very capricious: why 0·66, 1, and 5% of it should greatly impair ductility while 0·35, 3, and 6% do not, is not known.

Meteoric irons with 6·36, 7·87 and 8·21% nickel are reported as hard to file, and one with 8·59% nickel as easily filed.[p] The nickel-iron alloys are reported to rust less easily than iron: Faraday and Stodart found this true of an alloy of iron with 10% of nickel, but not to the extent previously alleged: while 10% of nickel alloyed with steel greatly accelerated rusting.

B. Cobalt.—Of the effects of cobalt on iron we have still less knowledge. Billings found ingot-iron with ·33 cobalt (but otherwise almost perfectly pure) solid, tough and decidedly weak when cold, and somewhat redshort.[r] As it contained no manganese its redshortness may have been due to what we call oxygenation. Alloys of 53·29 and 12·79% cobalt, with 46·71 and 87·21% iron respectively, made in Percy's laboratory were brittle.[s] Hot iron absorbs vapor of cobalt, evolving it when heated in vacuo.[t]

§ 149. Iron and Aluminium may according to Deville be alloyed in all proportions: among others the following alloys have been described.

Table 37.—Alloys of Iron and Aluminium.

| No. | Observer. | Composition. Al. | C. | Si. | Properties, etc. |
|---|---|---|---|---|---|
| 1... | Faraday and Stodart | ·0128 to ·0695 | ..... | ..... | Wootz. |
| 2... | Gruner | ·50 | 2·30 | 2·26 | Cast-iron. |
| 3. | G. H. Billings | ·52 | ·20 | ..... | Solid, homogeneous, forges well at red heat, crumbles at yellow. |
| 4.. | Rogers | ·80 | ..... | ..... | Resembled best Bombay wootz. |
| 5... | Mrazek | 2·30 | ·16 | 5·95 | |
| 6... | Faraday | 3 41 | ..... | ..... | White, close-grained, very brittle. |
| 7... | Calvert and Johnson | 12 00 | ..... | ..... | Very hard, but forgeable and weldable: rusts. |

1. Quarterly Jour. of Science, etc., 7, p. 288: Percy, Iron and Steel, p. 183. 2. Ledebur, Handbuch der Eisenhüttenkunde, p. 265, from Annales des Mines, XV., p. 135. Cast-iron from Champigneulle. 3. Trans. Am. Inst Mining Engrs., V., p. 452, 1877. Produced by fusing 12 parts of emery, 18 of alumina, 1 of pulverized charcoal and 36 of pure iron turnings: after heating to whiteness for 48 hours, the crucible was heated in an open-hearth steel-melting furnace. 4. Rogers, "Aluminium, its History, etc.," Richards, p 281, from Moniteur Ind., 1859, No. 2379. 5. Ledebur, loc. cit. Obtained by fusing iron wire with sodium, silica and cryolite. 6. Quarterly Journ. of Science, etc., 9, p. 320: Percy, Iron and Steel, p. 183. Obtained by intensely heating pure alumina with pure highly carburetted iron in a close crucible. Close granular texture. 7. Obtained by heating to whiteness 8 equivalents of chloride of aluminium, 40 of fine iron filings and 8 of lime: it was extremely hard and rusted when exposed to damp air, but could be forged and welded. Philosophical Magazine, X., p. 242, 1855; Percy, op. cit., p. 181. "Aluminium," Richards, p. 210.

A. Aluminium and Wootz.—As Faraday found from ·0128 to ·0695% of aluminium in wootz,[u] and as he obtained a product with "all the appreciable characters of wootz" by melting "good steel" with enough of an iron-aluminium alloy to yield by calculation ·40% of aluminium,[v] he ascribed the damask of wootz to the presence of aluminium.[u] But the wootz-like character of his product was probably accidental, if not imaginary, for Henry, a most trustworthy analyst, Karsten and Rammelsbeg find no aluminium in wootz.

(TO BE CONTINUED.)

**NOTE.—The publishers of the ENGINEERING AND MINING JOURNAL will thank the readers of this article if they will promptly call attention to any inaccuracies they may observe in it.**

a Percy, Iron and Steel, p. 170.
b Trans. Am. Inst. Mining Engineers, V., p. 453, 1877.
c Cf. § 145 A.
d Riley, Journ. Chem. Soc., XVII., p. 21, 1864; XXV., p. 544, 1872.
e Watts. Dict. Chem., V., p. 983.
f Journ. Iron and St. Inst., 1882, II., p. 770, from Comptes Rendus, XCV., I., p. 42.
g Percy, Iron and Steel, p. 195.
h Trans. Am. Inst. Mining Engrs., V., p. 454, 1877.
i Kerl, Grundriss der Metall-Hüttenkunde, p. 171.
j System of Mineralogy, J. D. Dana, p. 18.
k Trans. Am. Inst. Mining Engrs., V., p. 448, 1877.
l Holley, Trans. Am. Inst. Mining Engrs, VI., p. 115.
m G. H. Billings, Idem, V., p. 448.
n Percy, Iron and Steel, p. 171.
o Faraday and Stodart, Percy, Iron and Steel, p. 171.
p Boussingault and De Rivero, Meteoric Irons, "The Useful Metals and Their Alloys," p. 272
q Berthier.
r Trans. Am. Inst. Mining Engrs., V., p. 454.
s Iron and Steel, p. 173.
t Compare § 145 A.
u Idem, 7, p. 288, 1819: Percy, Iron and Steel, p. 183. Metallurgical Review, I., p. 175.
v Quarterly Journal of Science, Literature and the Arts, 9, p. 320, 1820.

## PERSONAL.

Mr. Henry Bratnober has denied the report that he tendered his resignation to the Montana Company Limited, Montana.

F. C. Richmond, superintendent of the lead mines at Shullsburg, Wis., is in the city for the purpose of purchasing machinery.

Mr. S. W. Schenks has been appointed superintendent of the Standard Coal and Coke Company's coal mines at Newcomb, Tenn.

Mr. Hennen Jennings, who until recently was superintendent of the New Almaden quicksilver mines, California, has gone to Venezuela to succeed Mr. Perkins as manager of the El Callao mine.

Mr. D. B. Lyman, who is superintendent of eight mines on the Comstock lode, Nevada, has just been elected superintendent of the mines of the Consolidated California & Virginia Mining Company.

The eighth annual meeting of the United States Association of Charcoal Iron Workers will take place at Nashville, Tenn., November 15th. Excursions will be made to the iron districts of Tennessee and Alabama.

Mr. Samuel Thomas has resigned the presidency of the Thomas Iron Company, of Pennsylvania, but will remain in the board of directors as consulting manager. Mr. Benjamin G. Clarke, of New York, succeeds him.

Mr. Julius H. Striedinger, C.E., who for the past two years has been engaged in extensive engineering works for the development of the United States of Columbia, is now in California examining mining property.

Mr. Peter Kemple, an old and well-known iron merchant of this city, died suddenly on the 18th inst., aged sixty-two years. Mr. Kemple was a prominent member of the West Point Iron Company, at Cold Spring, which manufactured the celebrated Parrott guns used in the late war.

## FURNACE, MILL, AND FACTORY.

The organization of a company for the manufacture of pig and bar iron and ironware at Gunnison, Colo., is now under way.

The Thomas Iron Company has blown out one of its furnaces at Hokendauqua, Pa., and is blowing out another, because of the inferiority of the coal furnished, on account of the strike in the Lehigh region.

The Jeffrey Manufacturing Company, of Columbus, O., who recently got control of the Mey & Oborn patents, are now ready to supply the market in several numbers and strengths of the Mey-Oborn detachable chain belting.

The Picher White Lead Company, of Joplin, Mo., propose to erect a coal-washing plant building at the Fort Scott Foundry and Machine-Works. They will also build a coking plant, and will probably adopt the Koerner coke oven.

The Fulton Iron Works, third largest in San Francisco, Cal., were destroyed by fire on the 19th inst. Petroleum, which had been used for fuel, caught fire as it was being put into boilers. The machine shops, with much machinery, including completed castings for six steam schooners, were destroyed. The loss will probably reach $200,000. The California Car Works, adjoining the iron works, were also burned. Loss between $40,000 and $50,000.

The Mullins Silicated Iron and Steel Company, to which we referred in our issue of the 8th inst., elected the following officers at a meeting held at St. Louis, Mo., last week: President, Gen. W. H. Powell, President and General Manager Western Nail Company, Belleville, Ill.; Vice-President, Dr. A. D. Williams, St. Louis, Mo.; General Manager, G. G. Mullins, United States Army, Los Angeles, Cal.; Treasurer, J. S. Robbins, St. Louis; Solicitor and Attorney, W. R. Singleton, Washington, D. C.; Secretary, H. C. Sparr, St. Louis.

## CONTRACTING NOTES.

Contracts Open will be found on page xix. New Contracts this week: No. 587, Railroad Track; No. 588, Railroad Construction; No. 589, Drilling Gas Wells; No. 590, Railroad Construction; No. 591, Sewer; No. 592, Iron Bridge; No. 593, Water-Works; No. 594, Mineral Oil; No. 595, Iron Stoves and other supplies.

W. M. Fishbach, Fort Smith, Ark., is in the market for dummy engines that use petroleum.

The Coleman Water-Works Company, Coleman, Tex., will shortly make contracts for pipe.

Doyle & Hudson, Blountsville, Ala., are about to contract for 1800 feet of water-pipe, one and a half to two inch.

The Ocala Lime Company, Ocala, Fla., is increasing the capacity of its works, and is in the market for roller chain, etc.

The Bucyrus Foundry and Manufacturing Company, of Bucyrus, Ohio, have secured the contract for constructing a large steam dredge to be used by the South Park Commissioners of Chicago. The dredge has a 70-foot beam, and will handle 2000 cubic yards of earth in ten hours.

The Arkansas Investment Company, Hot Springs, Ark., is about to make contracts for a water jacket furnace and mining machinery. The Rubicon and Bunker Hill mining companies, of the some place, are also in the market for machinery.

The Nashville Iron, Steel and Charcoal Company, Nashville, Tenn., is said to have made a contract with the Lawrence Iron Company for a full supply of "clean washed brown hematite ore" from the mines in Lawrence County, Tenn., for the two furnaces of the Nashville Iron, Steel and Charcoal Company, for ten years from January 17th, 1888. This contract, it is stated, will amount in the aggregate to nearly $2,000,000.

## LABOR AND WAGES.

The Union Coal Company, at Shamokin, Pa., has issued orders to its mine foreman to remove all persons working in its mines who are unable to speak and understand the English language. Serious accidents have frequently resulted from the misunderstanding of orders by the employés.

## GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including October 12th, as reported by the Marquette *Mining Journal*, were as follows:

| | Tons. 1887. | Tons. 1886. |
|---|---|---|
| Marquette, Marquette District | 697,025 | 725,942 |
| St. Ignace, " " | 80,654 | 62,595 |
| Escanaba, " " | 743,511 | 576,452 |
| " Menominee District | 976,675 | 734,365 |
| Ashland, Gogebic District | 950,316 | 612,993 |
| Two Harbors, Minnesota Iron Company, Vermillion District | 330,464 | 264,334 |
| Total tons | 3,758,645 | 2,976,581 |

Shipments of Iron Ore, Gogebic District.—Shipments of iron ore from Ashland, Wis., the mines of the Gogebic District, for the season, up to and including October 12th, are as follows:

| | Tons. | | Tons. |
|---|---|---|---|
| Atlantic | 1,318 | Norrie | 154,261 |
| Anvil | 4,581 | Odanah | 20,071 |
| Ashland | 135,803 | Pabst | 7,907 |
| Aurora | 100,606 | Palms | 1,342 |
| Bessemer | 11,075 | Pence | 1,457 |
| Brotherton | 19,588 | Puritan | 25,024 |
| Colby North | 59,695 | Sunday Lake | 10,759 |
| Colby South | 140,237 | Superior | 21,370 |
| Germania | 41,768 | Sellwood | 2,374 |
| Iron Chief | 2,250 | Vaughn | 2,101 |
| Iron King | 40,533 | Trimble | 15,288 |
| Ironton | 23,110 | South 15 | 2,582 |
| Kakagon | 41,862 | Parker | 578 |
| Montreal | 23,187 | | |
| Nimikon | 18,389 | Total tons | 930,316 |

The shipment shows an increase of 317,323 tons this year, as compared with the shipments made at the same time last year.

### ALABAMA.

Sipsey Valley Land, Mining, and Manufacturing Company.—Subscriptions to the $100,000 essential to organization have been received and paid in full. The capital stock will shortly be increased to $1,000,000. The officers are: W. W. Hungerford, of Meridian, President, and H. M. Nichols, of Meridian, Secretary and Treasurer, and the Directors, N. B. Lord and J. W. Galluo, New York; Clarke Hayes, Franklin, Pa.; W. W. Hungerford, Joel P. Walker, John A. Lewis, H. M. Nichols, Meridian, Miss. The company office will be at Meridian, Miss. The property consists of coal and iron lands in Alabama.

### ARIZONA.

#### COCHISE COUNTY.

In the cases of James Reilly *vs.* Benoni Blackmore, James Reilly *vs.* George G. Berry, and the Mountain Maid Mining Company *vs.* James Reilly, appealed from the Cochise County Court to the Supreme Court of Arizona, Judges Wright and Barnes have rendered a decision affirming the decision of the lower court and upholding the title of the Tombstone townsite patent, as against the Mountain Maid title claimed under United States mining patent, on the ground of priority. Local papers state that these cases are important, as the title to considerable improved property in the town of Tombstone is involved, and much bad feeling was engendered during their pendency, awaiting the decision of the Supreme Court. It is possible that an appeal will be taken to the Supreme Court of the United States.

#### GUNNISON COUNTY.

Acting Secretary Muldrow, on the 14th inst., rendered a decision in the case of the United States *vs.* Pearsall & Freeman, Gunnison Land District, Colorado, involving mineral entries of placer claims, on appeal from the Commissioner of the General Land Office. The Commissioner held that the location of the claims did not conform to the system of public service as contemplated by the statute, and that they were not located in good faith for mining purposes, but to obtain the control of the water. The Acting Secretary holds to the contrary, and on the first point says that in the construction of the statute as held in the case of William Rabbin, where it was decided that the requirement of the statute that the claim upon surveyed land must conform to the legal subdivisions thereof, "as near as practicable" must be construed to mean that the claims must conform only "as near as reasonably practicable;" that it is the intention of the mining laws generally to permit persons to take a certain quantity of land fit for mining and not compel them to take such a quantity irrespective of its fitness for mining.

#### PINAL COUNTY.

Tortilita Gold and Silver Mining Company.—The following are extracts from a report made by Mr. Hal Sayr, mining engineer, of Denver, Colo., to the New York *Herald*, and published October 21st: "The mill, office, assay building, and a dozen cobertizos occupied by the Mexican laborers are located in a little gulch which heads in the Tortilita Mountains. An examination of this gulch for a long distance above the camp showed no water at the surface except in one place, where a stagnant pool in a rock was fed by a very small stream trickling from a crack in an adjacent ledge. The water for the mill is pumped from a well forty feet deep in the bedrock of the gulch. We were told that owing to the scarcity of water the mill had been used only during the daytime for several days.

"An examination of the mill made by permission of Mr. Elmore, the superintendent, showed the usual machinery for crushing and treatment of ores by raw amalgamation. A five-stamp battery had the accompanying pans and rotating mullers, together with the necessary boiler and engine for driving them. But, taken as a whole, the mill and its surroundings were not in first-class condition, and did not bear out the published description.

"We were shown the Golden Eagle mine, said to be a gold mine, the only one of the group which is claimed as such. It is in a granite formation, shows a defined vein of quartz from six to ten inches thick, dipping to the south at an angle of about 80 degrees from horizontal.

"The shaft is said to be eighty feet deep. No drifting or stoping has been done. The material taken from the shaft remains where it was dumped. It is said to carry $9 in gold and $5 in silver to the ton. This being the nearest mine to the mill, as no ore from it is being treated, it evidently has no present value. The By Chance Extension and Lone Will silver mines extend over a surface about one thousand by two hundred feet. They are of all depths from a mere pit to 180 feet. They dip in various directions and show neither unity nor continuity. The work has evidently been done to ascertain if possible the dip and trend of a main ore body and at the same time to get all the paying ore within reach. There is no display of systematic work, but a constant groping for something definite, some defined wall or dip. Neither of these have as yet been found continuous: breaks and faults in all directions have been encountered, and after all the work done there is still a very great doubt if there is a lode, if indeed the ores belong to or came from a lode, or have any continuity below water level and where it is claimed by the present owners that there is a 'concentration of ore,' whatever they may mean by the expression.

"These workings follow a well-defined ridge or ledge of syenite which has something the appearance of a trap dike. In this syenite occur veins and bunches of quartz, which are apparently the source of the ores mined.

"The principal workings have centered about points where the ledge has been greatly disturbed, where, instead of maintaining itself as a ridge above the plain, it has disintegrated and merged into the general level."

The best ore that could be found assayed so high that if there were any real fissure veins of it the mines would be of some value. The assays ran from $2.11 to $85.63 a ton. But thousands of tons of the ore were worthless.

Continuing, General Sayr in his report says: "The ore-bodies in each of these mines have been worked out to the water level—forty to fifty feet—whereas in the case of the By Chance and Lone Will they are said to 'concentrate.' In following these ore-bodies—or rather the openings left by working out the ore-bodies—they were found to terminate in a soft clayey material having no appearance of a lode, nor is there a defined lode developed in any of these workings either at the surface or underneath. Judging from small pieces of the ores picked up in the abandoned workings, they were composed of sulphides of iron, lead and silver. These, by the action of the air, were changed to oxides and sulphurets, with possibly some chlorine, becoming thereby, in a measure, a free milling ore. If the deposit continues below the water level the ores will be found as sulphides, the percentage of silver will, doubtless, materially decrease, and the ore become more refractory.

"Some small samples of ore found in the old workings assayed as high as $840.61 per ton, while great bodies of ore were worthless.

"From the assays it may be seen that very rich ores were found here and mined in some quantity; but notwithstanding this richness of ores, the 'concentration' claimed below water level, and the natural decrease of water acknowledged by Mr. McGovern, the foreman, this property is and has been lying idle for a long time, while work is being prosecuted on the low-grade ores of the By Chance and Lone Will, assays from which were given above. This, taken in connection with Mr. Elmore's statement that he was pushed to make expenses, places the matter where the only inference that can be drawn is that the ore-body is exhausted.

"Mr. Elmore stated that the property was no more than paying running expenses. He represented the monthly expenditure at about $2098, exclusive of his salary."

### BRITISH COLUMBIA.

The gold mining operations in British Columbia are being carried on a small scale, owing to the exceeding difficulty of transportation, but as soon as the country is opened up and the means of transportation made easier, large quantities of gold will probably be taken from the mines.

## CANADA.

### PROVINCE OF ONTARIO.

BEDFORD MINING COMPANY—This company has been organized with a capital of $250,000, to mine for iron and other minerals in Bedford, near Kingston. The corporators are Sir Richard Cartwright, Hon. Alexander Morris, William Morris, John D. Flower, Benjamin W. Folger and others.

## CALIFORNIA.

### BUTTE COUNTY.

BAY STATE GRAVEL MINING COMPANY.—The Oro Fino mine, adjoining the Cole claim on Big Butte, has been sold to this company, in which Boston capitalists are interested. It is said that the mine has proved to be rich as far as prospected. The company has engaged Geo. W. Henderson, one of the most practical miners in the country, as superintendent, and secured unlimited water privilege, with a ditch already covering the mine from the water.

BIG BEND TUNNEL AND MINING COMPANY.—Arrangements, it is said, are now being made for the erection of a powerful electric plant at this company's works at Oroville, to which we referred in our issue of September 24th. All the machinery is to be driven by electricity. The motive power for generating the electricity will be the great volume of water that pours from the mouth of the tunnel.

### EL DORADO COUNTY.

Some 2000 feet north of the tunnel now being run by the True Consolidated Mining Company, near Placerville, another tunnel has been driven in already some 700 feet, and will tap the mother lode and parallel veins some 100 feet still deeper than the tunnel of the above company. This tunnel also controls a stretch of ground on the "mother lode," some 8000 feet in extent. Twenty-five hundred feet farther north still, Mr. C. Neal has associated himself with some Eastern and local capitalists to commence work upon another tunnel, which will tap the same veins about one hundred feet deeper than the above tunnel. This, also, is a very important enterprise, as it is intended that this tunnel shall be extended considerably farther east than the tunnel being run by the company, and will also enable the development of the mother lode north up to the Chili Bar, a point on the south fork of the American River. These three tunnels will develop a length of fully four miles of the mother lode.

TRUE CONSOLIDATED MINING COMPANY.—The tunnel being driven by this company one mile from Placerville is now about one thousand feet long. The available quartz stopes run to the hight of not less than 700 feet on the whole belt, which is known to contain three well defined quartz veins. Several shafts of good quartz have been worked more or less for the last thirty-five years, the greatest depth attained being 140 feet. At this point the water came too heavy, and work had to be abandoned. The tunnel now being driven will drain the whole lode to the depth mentioned. This tunnel can also be extended still further south, or would come in under the once celebrated Pacific mine, tapping it at the depth of 800 feet. The depth of the shaft on this mine is now 700 feet. In addition to this, this tunnel will be available for the development of other veins east of the mother lode.

### MONO COUNTY.

BULWER CONSOL DATED MINING COMPANY.—A supplementary bullion shipment has been made, making about $7700 received from the recent run of the mill, which yields the company a fair profit.

STANDARD CONSOLIDATED GOLD MINING COMPANY.—The bullion shipments for the first two weeks of this month amounted to $16,362.

### MONTEREY COUNTY.

A new petroleum field has been discovered in southern Monterey County which is said to be exceedingly promising. The *Mining and Scientific Press* states that for thirty years certain tar springs have been known to exist in the Cholame Valley, about 23 miles east of San Miguel, the native product of which was utilized by sheepherders for marking sheep. Hearing of these springs the spot was visited by Henry Raymond, not long since, and samples obtained which were found by H. G. Hanks to yield 67 per cent of illuminating oil. Raymond and associates immediately located what is called the Little Cholame Oil district. The district lies northerly from the town of Parkfield, and south of and near the coal mine now being opened by the S. P. RR. Co. The district is on the line of the railroad survey from San Miguel to Bakersfield. Shales and sandstone abound, and wherever breaks occur in the rock it is stated that petroleum exudes in quantities. A report on the prospect made by Frank Thayer is encouraging, and companies will at once be organized to sink wells in the district. Boring will be undertaken in the low hills bordering Little Cholame Valley. Oil in some quantity has been already discovered on the San Joaquin side of the mountains east of the new district, at Buena Vista.

### NEVADA COUNTY.

SAN FRANCISCO COPPER COMPANY.—Johanna Casey has brought suit in Nevada City, against this company for $50,250 damages. Plaintiff's husband was killed in the company's mine at Spencerville October 18th, 1885.

### PLUMAS COUNTY.

GREEN MOUNTAIN GOLD MINING COMPANY.—Attachments have been put on the personal property of this company by Carter & Hall, of Crescent, and J. R. Murray, of Greenville. The realty is covered by a mortgage of about $35,000, held in New York. The total indebtedness is understood to be in the neighborhood of $100,000. The laborers, mostly Italians, have claims, it is estimated, that will amount to $25,000. Most of these, says the Greenville *Bulletin*, will file labor liens, which, while they can not affect the mortgage, will probably operate to prevent other creditors of the mine from realizing any thing. The miners have gone to work, and they seem to have confidence in the future of the property, which is said to be looking better now than for some time past.

### SAN BERNARDINO COUNTY.

Arrangements are making for separating the Colton Marble and Lime Company into two companies, one to be the lime company and the other to be known as the Glover Mountain Onyx Company. The fact has been demonstrated that there is no marble in Glover Mountain, but the stone heretofore called marble, says the *Mining and Scientific Press*, is now known to be onyx of different colors. It is stated that there is a great demand for this stone.

## COLORADO.

### BOULDER COUNTY.

INGRAM.—This mine, situated in Gold Hill mining district, has been sold to St. Louis capitalists.

### DOLORES COUNTY.

Our special correspondent at Rico sends us the following:

ENTERPRISE.—The owners of this mine, early in the present summer, brought into the camp some of the first mining machinery of importance used here, and since that time have been sinking a shaft, pumping out an excessive flow of water. The mine is situated on Dolores Mountain, above the famous Newman Group, and it was in the hope of striking similar mineral that the shaft was sunk in this barren rock. At a depth of about 250 feet, the vein has just been struck, being from 18 inches to 2 feet wide, an average assaying 503 ounces silver and $\frac{3}{10}$ ounces in gold. The strike is one of the most important made in Rico for some years, and being one of the first at any considerable depth, is most encouraging for deeper sinking throughout the camp. The lack of proper machinery by other mines has heretofore prevented this.

### LAKE COUNTY.

CHRYSOLITE SILVER MINING COMPANY.—A preliminary report issued by the company shows that the operations of the past year have not effected any favorable change in the prospects of the mine. Some $29,000 more than the receipts were expended in exploring work and other expenses during the winter. With the help of rigid economy since that time, including the further reduction of all salaries to the lowest possible point (the total of salaries and expenses of the New York office being now about $1300 including $250 per annum for registry of stock certificates), the expenses of the company have been paid from the receipts. Against a balance of $63,146.20 October 13th, 1886, there is now on hand about $35,000, with the October accounts not in. A considerable amount of dead-work has been done during the year, without any new discovery of ore. Boring has been made with the diamond drill from the bottom of the vertical shaft in *D* 29 to the depth of 193 feet below the shaft, or an aggregate depth of 489 feet from the surface. This drill-hole penetrated the granite for seven feet, demonstrating that the main mass of the mountain had been reached. No indications of favorable ground underlying the present workings were obtained. The stamp-mill has been idle through the year, it having proved impracticable to make fair arrangements either for custom work or for lease of the mill. Some explorations are still in progress. Detailed reports of the treasurer and the general manager will be published when the necessary accounts shall have been received and examined, a work which will be somewhat retarded by the reduction of clerical force, both at Leadville and New York. The present trustees and officers of the company are working without remuneration (except $800 per annum paid to the secretary, who is also book-keeper), out of a simple desire to do the best that can be done for the interest of the stockholders. They know of no better way to continue the work than by the practice of economy and the prudent expenditure of money in testing all chances which may be indicated by developments in the mine or in the neighborhood. The annual meeting will be held November 2d.

### OURAY COUNTY.

JED SILVER MINING COMPANY.—This company has been organized to operate property in the Red Mountain District. The principal business office will be at Gallipolis, Ohio.

### PITKIN COUNTY.

The apex and side-lines litigation, which has proved disastrous to Aspen and adjoining mining camps, has been compromised. The parties to this arrangement were, upon the apex side, Messrs. Reynolds, Hallam, Taylor, Senator Teller, Hughes, and the side-liners Messrs. Beals, Hagerman, Davis Devereux, Wheeler and Newberry. Messrs. E. T. Butler and D. R. C Brown, two prominent side-line men, it is stated did not go into the deal. Mr. Butler says Mr. J. B. Wheeler promised him that he (Wheeler) would never compromise or settle with the apexers. Mr. D. R. C. Brown authorizes the correspondent of the Leadville *Herald-Democrat* to say that he and Butler have been sold out and deserted. The details of the settlement are of course not yet known, but the litigation between the Durant people and the Aspen Mining and Smelting Company and J. B. Wheeler is now settled, and D. R. C. Brown and E. T. Butler, two thirds owners of the Aspen mine, will be permitted to come into the deal within a reasonable time. It is understood that J. B. Wheeler gives up one half interest and acknowledges it is a vein.

A meeting was to be held at Colorado Springs on the 17th inst., by all interested for the purpose of arranging all details under the agreement of settlement.

## DAKOTA.

### LAWRENCE COUNTY.

GALENA SMELTING AND REDUCTION COMPANY.—There is said to be a prospect of an early and equitable settlement of rates between the smelter company and Galena mine owners, and that contracts will shortly be entered into by which sufficient ore to keep the smelter in continuous operation will be furnished.

IRON HILL MINING COMPANY.—The company has commenced sinking in a 60-foot shaft on the line of the Antietam and Carbonate claims. This shaft is on a direct line with the direction of the crevice recently found in the Albe; boulders of very rich ore were found in it a year or two ago.

## IDAHO.

### ALTURAS COUNTY.

JUMBO GOLD AND SILVER MINING COMPANY.—A statement made shows the full indebtedness of the property to be less than $10,000; while the mill, water flume, piping, etc., would probably sell for that amount. The assets, independently of the mining claims, water-rights, etc., therefore exceed the liabilities. The lower tunnel has been driven about 50 feet. It is thought that the ledge will be tapped at 200 feet. There has been some discussion in reference to increasing the price of the stock to 75 cents per share, but as a number of the smaller creditors have not taken the stock, while others have signified their intention of purchasing at 50 cents, it was decided that the price should remain at that figure.

## INDIANA.

### WABASH COUNTY.

Gas well No. 4, located seven and a half miles south of Wabash, was drilled on the 15th inst., and developed a good showing of gas. Trenton rock was reached at a depth of 875 feet. There is a slight flow of gas, but not sufficient to benefit Wabash. The question of shooting the well will be decided by the City Council.

## KENTUCKY.

### BOYD COUNTY.

WHITE HOUSE CANNEL COAL COMPANY.—A company has been organized at Ashland with a capital of $400,000. The officers are John Carlisle, Cincinnati, Ohio, President, and Jay H. Northup, Secretary and Treasurer. The company is formed for the purpose of developing a large cannel coal-field.

## MEXICO.

BATOPILAS MINING COMPANY.—We have received the following official information in reference to this company, which is a consolidation of the companies mentioned below and which were represented at the meeting held in this city on the 11th inst., as follows:

Consolidated Batopilas Silver Mining Company.—Total number of shares, 120,000; present or represented by proxy, 90,539 shares; in favor of consolidation, 89,729 shares; against consolidation, 810 shares.

Descubridora Consolidated Silver Mining Company.—Total shares, 120,000; present, 103,509 shares; in favor of consolidation, 103,324 shares; against consolidation, 185 shares.

Valenzuela Consolidated Silver Mining Company.—Total shares, 40,000; present, 35,898 shares; in favor of consolidation, 35,836 shares; against consolidation, 62 shares.

Camuchin Consolidated Silver Mining Company.—Total number of shares, 40,000; present, 34,471 shares; in favor of consolidation, 34,394 shares; against consolidation, 77 shares.

Animas Silver Mining Company.—Total shares, 40,000; present, 35,508 shares; in favor of consolidation, 35,431 shares; against consolidation, 77 shares.

The New Giral Silver Mining Company.—Total shares, 2000; present, 1799 shares; in favor of consolidation, 1746 shares; against consolidation, 53 shares.

Such further steps as are required by law have since been taken, and consolidation has been fully effected. All the companies are now merged in the new corporation called the Batipolas Mining Company. The two Washington and two Philadelphia companies have acted upon the matter favorably. Only the formality of executing conveyances remains to complete their union with the new company, the trustees of which are as follows: George W. Quintard, Alexander R. Shepherd, Andros R. Stone, Edward V. Loew, John N. Hayward, Charles T. Barney, Lyndon H. Stevens, Samuel Elliott, John M. Ceballas, George B. James, William F. Mattingly, Charles E. Johnson, L. H. Scott, and the officers, George W. Quintard, President; Alexander R. Shepherd, General Manager; John N. Hayward, First Vice-President; Charles T. Barney, Second Vice-President; Andros B. Stone, Treasurer; Lyndon H. Stevens, Secretary.

We referred to the consolidation of these companies at length in our issue of October 1st.

## MICHIGAN.

### COPPER MINES.

OSCEOLA CONSOLIDATED MINING COMPANY.—Reports state that the Osceola cross-cut is nearing completion. The diamond drill reached the conglomerate, which shows rich. Later reports state that the cross-cut on the 19th inst. was four feet in the ledge, no hanging wall had then been struck, and the prospect is not favorable.

QUINCY MINING COMPANY.—The company, it is said, has been notified by the government to stop the disposing of its sand in Portage Lake, and as its stamp-

mill is on the border of the lake it seems probable that a new mill will have to be erected. The deposits of sand interfere with navigation, and as the notification to stop running the sand is peremptory some action will have to be taken at once.

## MISSISSIPPI.

Clay is being shipped from Duck Hill to Quincy, Ill., for the manufacture of fire-brick. Excellent fire-brick clay has been located in many parts of the State, and the manufacture is carried on to a considerable extent on the sea coast.

## MONTANA.

### BEAVERHEAD COUNTY.

GOLDEN CIRCLE.—This group of gold mines, eleven in number, has been sold to J. F. Carter, of Philadelphia, for $30,000. Work upon a 1100 foot tunnel will begin at once. This tunnel will tap the Sucker mine at a depth of 800 feet.

### JEFFERSON COUNTY.

ELKHORN MINING COMPANY.—Active work has commenced at this mine, which has been shut down for several months an account of water. The water is now all out. The showing on the 650 east and 750 west is good. New machinery is being added and the mill will start up about November 1st.

### MEAGHER COUNTY.

Castle Mountain, the new carbonate camp which is now attracting so much attention, is situated in Meagher County, near White Sulphur Springs, about 100 miles east of Helena. The town, Castle Mountain, is now growing rapidiy, but it greatly needs better transportation facilities. At present the only line of communication is via White Sulphur Springs, thirty miles distant. A corresponnent of the Helena *Independent* says that the mineral belt of Castle Mountain is confined to its eastern slope. This belt is approximately triangular, about eight miles long, and at its southern end not more than a mile wide, while the northerly end is fully six miles wide. Abutting against the latter are the coal beds, where a four foot vein or coal has been disclosed by three tunnels. This coal, it is claimed, is well adapted to cokeing. The altitude of this mineral belt varies from 6000 to 7000 feet. The general surface of the country, notably the northern portion, is smooth and accessible by wagon; the ores are chiefly galena and carbonates, varying in assay value from $40 to $75 per ton. The mines now being worked are the Cumberland, the Great Eastern, the Hidden Treasure, the Yellowstone, the Morning Star, and the Alice. In this vicinity, the nortern portion of the mineral belt, is located the Black Hawk, Althea, Eva, Ætna, and other promising prospects.

### MISSOULA COUNTY.

HELENA & VICTOR MINING COMPANY.—This company has made some new strikes in its mine, the Curlew. A body of ore was struck in the 100-foot drift, which averages 10 inches in width and shows fine specimens of ruby silver. Another lead has been struck in the 200-foot drift, which has been followed 100 feet with good results.

## NEVADA.

### ELKO COUNTY.

HUMBOLDT COAL COMPANY.—In 1870, this company was organized to develop the shale properly, as it was then termed, traceable for nearly a mile along the Humboldt River banks. A tunnel run into the side of the mountain cut the vein 15 feet below the surface. Owing to dissensions the work of development was suspended until a recent test of the supposed shale for fuel gave satisfactory results. Two of the trustees of the original company are dead, and General Hatch, another of the number, is absent in Paris, France. A meeting of the company will be held October 20th, when a new Board of Trustees will be elected and the development of the property proceeded with. The company has purchased 240 acres of the ground on which the coal is located and applied for a patent. It is distant only five-eighths of a mile from the Central Pacific Railroad line. The railroad company has agreed to lay a track to the coal beds and furnish transportation at a figure which will admit of the coal being laid down at Virginia City or in California for $12 per ton.

NORTH BELLE ISLE MINING COMPANY.—Work has again been resumed at all points in the mine. The extraction of ore has commenced. The mill is about to start up.

### LAUDER COUNTY.

MORNING STAR.—This mine, at Pittsburg, was purchased at sheriff's sale at Austin by J. L. Chamberlain for $2000.

### STOREY COUNTY—COMSTOCK LODE.

We condense the following from the Virginia City *Chronicle:*

CHOLLAR MINING COMPANY.—Connection has been made between the Sutro tunnel and the Chollar incline through a drift run westward from the tunnel connection with the Combination shaft. This drift was run by the tunnel company, and strikes the incline a short distance above the 1700 level.

This tunnel connection with the incline was made for the purpose of providing an outlet for the flow of water that will be used to drive the Pelton wheels to be placed in the shaft and incline to operate the new mill. The incline was found to be in good repair from the Sutro tunnel nearly up to the bottom of the vertical shaft, 1000 feet below the surface.

In addition to using water power for operating the new mill at the Chollar and the electric light dynamos, the management propose utilizing it for hoisting ore extracted from the mine.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The annual report for the year ended September 30th shows there has been extracted 125,876 tons of ore, all of which has been milled by the Comstock Mill and Mining Company, and has yielded bullion of a total assay valtie of $3,523,930, which shows an average yield of $27.99 to the ton. This bullion carried $1,458,005.98 in gold, and $2,065,924.06 in silver. The report shows that a vast area of ore is exposed and gives a detailed account of operations in the mine, including the process of successfully extinguishing the fire raging on the 1600 level through the injection of carbonic acid gas, and states that: "There is good reason to believe that it has not only extinguished the fire that broke out in December, but also all fires which may have been smouldering in the old stopes since the first breaking out in the year 1881. This end being accomplished without interfering with the work in the mine and without lessening the usual output of ore, there comes the satisfaction of knowing that the whole mine can be reopened and be worked throughout, and that our operations will not be confined to a portion thereof, as they have been for some years, with the constant danger of being driven out by a lurking enemy such as we have had to contend with." The superintendent, in reviewing the situation in the concluding paragraph of the report, says: "The past year has been an eventful one for the Con. California & Virginia mine. I stated in my last annual report that there were indications of improvement in the north drift which was being run on the 1400 level. Those indications there described have led the way and have since grown into a development of large quantities of paying ore, which, with the ore developments made in other parts of the mine, have put the mine on a dividend-paying basis. These large quantities of ore which are in sight, taken in connection with the fact that by the extinguishment of the fire the whole mine can now be opened out with prospects of further developments, give good reason to the company to feel assured of a long continued era of prosperity."

The financial statement for the year ended October 8th, 1887, shows:

RECEIPTS.

| | |
|---|---|
| Bullion samples | $680.67 |
| Gross product, yield of the mine for fiscal year | 3,526,148.52 |
| Total | $3,526,829.19 |

DISBURSEMENTS.

| | |
|---|---|
| W. H. Patton, superintendent, balance cash in Virginia | $2.119.86 |
| Nevada Bank, balance cash on hand | 67,441.86 |
| Cash, balance in San Francisco office | 61.95 |
| Balance outstanding last annual meeting since settled | 32,103.42 |
| General expenses | 2.031.29 |
| Salaries and wages | 492,853.13 |
| Interest and exchange | 8,677 19 |
| Expense, San Francisco office | 2,811.94 |
| Supplies | 248.945 74 |
| Assay office | 17,298.35 |
| Virginia office expenses | 1,275 91 |
| Hauling | 6,901.15 |
| Taxes | 45.258 82 |
| Compressed air | 5,267.69 |
| Water | 5,700.00 |
| Hoisting | 20,214.20 |
| Sutro Tunnel Company royalty | 125,876.00 |
| Reduction—milling ores | 881.132.00 |
| Bullion freight | 12,395.45 |
| Bullion discount | 554,374 47 |
| Insurance | 1,8·8 95 |
| Dividends, Nos. 2 to 11 inclusive | 1,080,000 00 |
| Real estate | 1,200.00 |
| Total | $3,526,829.19 |

CROWN POINT MINING COMPANY.—A large quantity of ore has been extracted in explorations on the upper levels and shipments to the Mexican mill will be shortly resumed. The southwest drift on the 400 level cut through a solid body of ore 20 feet in width. This was supposed to be the continuation of that exposed in advancing the south drift on the west vein, but it is now known to be a new development, having no connection with that exposed in the south drift west of the shaft. After the 20 feet of solid ore mentioned above was passed through by the southwest drift, run east of the shaft, a belt of porphyry was entered, which proved to be 15 feet in breadth. Passing out of this porphyry belt the drift again entered ore, which gives an average value of $50 a ton, and is known to be the southern continuation of that exposed in east cross-cut No. 3. This last development is estimated to be only 40 feet north of the Belcher line.

## NEW MEXICO

### SOCORRO COUNTY.

PEACOCK MINING COMPANY.—The mine has shut down for an indefinite period. The stock of this company is largely held in St. Louis.

## NEW YORK.

### TOMPKINS COUNTY.

Professor Charles S. Prosser, of Cornell University, Ithaca, writes to us that he has examined the drillings from the Ithaca test well, to which we referred in our last issue, and can now report accurately in reference to the salt deposit. The general report as to the depth at which the first salt was reached, 2270 feet, was not strictly correct, but should be 2244 feet. The following statement is approximately correct: The first stratum of salt in the Ithaca test-well was reached at a depth of 2244 feet, and the bottom of the sixth stratum at 2590 feet. The thickness of the six strata of rock salt is as follows: First, 24 feet; second, 54 feet; third, 17 feet; fourth, 21 feet; fifth, 42 feet; sixth, 48 feet; total, 206 feet. Or, 206 feet of the 346 feet of salt and shale is rock salt. A thin stratum of salt was found at 2646—58 feet. The well is to be drilled at least to the Niagara limestone, in the hopes of finding natural gas.

## NORTH CAROLINA.

### MOORE COUNTY.

MONROE.—This gold mine is now controlled by an English company, which has a capital of £75,000. The property consists of a tract of 80 acres, situated in the "gold belt" of North Carolina. The ore peculiar to this belt is a fine mixture of dark slate and quartz, easily mined and milled. There are two strong veins of this ore on the Monroe property, averaging six feet in width, and worth by actual mill test one and one half ounces of free gold to the ton of rock. The mine is being rapidly opened up, preparatory to erecting a stamp-mill. The main shaft has attained a depth of 75 feet.

## PENNSYLVANIA.

### OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 15th:

| | 1887. Gallons. | 1886. Gallons. |
|---|---|---|
| From Boston | 3.324.607 | 4.540,132 |
| Philadelphia | 129.524,869 | 117,949,388 |
| Baltimore | 6,496,152 | 12,582,444 |
| Perth Amboy | 13,065,312 | 4,476.466 |
| New York | 297,265,306 | 309,995,984 |
| Total exports | 449,676,246 | 449,544,414 |

### COKE.

The Pennsylvania Railroad Company will begin at once the construction of a line of road from Latrobe to the new coke-ovens of the Hostetter Coke Company. The road will be from six to ten miles in length and so constructed that it may be extended still further into the coke regions as a branch road. It is also likely that the Baltimore & Ohio and the Pittsburg, McKeesport & Youghiogheny will in a short time extend their lines from the Mt. Pleasant district into the neighborhood of the Hostetter ovens. The Baltimore & Ohio will likely arrange to cross the Pennsylvania Railroad near Latrobe soon in order to participate in some of the valuable coke and coal traffic north of it, now enjoyed solely by the Pennsylvania Railroad.

### COAL.

PITTSBURG & FAIRPORT COAL AND COKE COMPANY.—The lands of this company are in Mercer, Butler and Allegheny counties, and the project is to ship merchantable coal via the Pittsburg & Western Railroad through Fairport to lake ports. The slack will be coked and also shipped, with a view probably to supplying the Lake Superior iron manufacturing concerns.

### NATURAL GAS.

WHEELING NATURAL GAS COMPANY.—This company has lately been conducting some experiments with its weaker wells to see what the results of deeper drilling would be. The original depth of the wells was from 2100 to 2200 feet, where the third sand is found. At a depth of about 2300 feet there began to be signs of another good sand, and a few more plunges of the drill tapped the rock. The gas flew out with such force that the tools would not go down any longer, and the drilling was stopped. A careful test of the first well showed a pressure of over 600 pounds, which is nearly as much as the largest of the famous Grapeville wells. Three or four other wells, when put down to the fourth sand, showed the same result. The lucky find is a new sand 150 feet below the old gas-producing streak, and it promises to not only double the production of the Hickory District, but also to throw new light on gas developments in the other fields.

## SOUTH AMERICA.

### UNITED STATES OF COLOMBIA.

EL TALENTO GOLD MINING COMPANY.—A controlling interest in this company has been secured by influential parties of New York, and a new board of directors elected as follows: Wm. H. Ritter, Wm. Allen Smith, Alfred R. Kimball, J. V. V. Olcott and Joseph Koura. Mr. E. E. Olcott, mining engineer, New York, will be the consulting engineer of the company.

## UTAH.

### IRON COUNTY.

KANARRA COAL COMPANY.—This company has contracted to deliver 150 tons per month for a year, to the Christy Silver Mining Company, of Silver Reef, at 12 per ton. The Kanarra coal-fields are the nearest to the Nevada line and about twenty-five miles from Silver Reef. When the extension of the Utah Central Railroad is put through this country this coal will be shipped through to Nevada and California. The survey of the Denver & Rio Grande Railroad shows that it will also run within fifteen miles of these coal-fields.

### WASHINGTON COUNTY.

CHRISTY SILVER MINING COMPANY.—According to reports the Rae electric system is showing good results at this company's mill. Assays from the settlers show a saving of $1.10 per ton in bullion production over the old manner of working. A thorough clean-up of the mill has not been had, but it is thought that the saving of floured quicksilver will be more than 50 per cent.

### VIRGINIA.

WISE COUNTY.

Several veins of coal of a thickness, of 4, 7, 8, 9, 12, 13 and 14 feet are being opened up at Big Stone Gap. About half of these veins are coking coals, running 98¾ of carbon; ¾ of one per cent is sulphur, and 3½ per cent of ash, according to assays made by Andrew McCreath, of Harrisburg, Pa.; Franklin Plat, of Philadelphia; John J. Stevenson, of the University of New York City; C. R. Boyd of Virginia; Dr. Ruffner, of Virginia, and John R. Proctor, of Kentucky. This belt of coal runs into the Elk Horn belt in Kentucky, which is the same coal The other half of these coals are fine splint for steam, gas and grates.

### WEST VIRGINIA.

KANAWHA COUNTY.

PITTSBURGH-KANAWHA COMPANY.—This company is sinking a new well to supply with natural gas the salt works of John Q. Dickenson, with whom it has a 25-year contract. Other wells will be sunk with a view to supplying Charleston with natural gas.

## COAL TRADE REVIEW.

NEW YORK, Friday Evening, Oct. 21.

### Statistics.

**Production Anthracite Coal** for week ended October 15th, and year from January 1st:

| TONS OF 2240 LBS. | 1887. Week. | 1887. Year. | 1886. Year. |
|---|---|---|---|
| P. & Read. RR. Co.. | 174,883 | 5,704,171 | 8,986,358 |
| Cent. R. R. of N. J. | 81,226 | 3,822,621 | * |
| L. V. RR. Co..... | 98,292 | 4,935,617 | 4,837,406 |
| D., L. & W. RR. Co. | 150,851 | 4,381,138 | 3,901,012 |
| D. & H. Canal Co.. | 83,016 | 2,969,041 | 2,835,378 |
| Penna. RR..... | 56,711 | 2,844,076 | 2,431,288 |
| Penna. Coal Co..... | 38,071 | 1,180,941 | 1,074,152 |
| Penna. Canal Co.... | 18,712 | 375,381 | 343,700 |
| Total..... | 701,763 | 26,212,976 | 24,409,294 |
| Increase..... | | 1,803,682 | |
| Decrease..... | 77,330 | | |

* Included in tonnage of Philadelphia & Reading RR.

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

| | | | |
|---|---|---|---|
| 1882..... | 23,058,933 | 1884..... | 24,184,012 |
| 1883..... | 24,184,621 | 1885 .... ... ..... | 23,606,691 |

**Production Bituminous Coal** for week ended October 15th, and year from January 1st:

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

| | 1887. Week. | 1887. Year. | 1886. Year. |
|---|---|---|---|
| Phila. & Erie RR..... | 832 | 16,870 | 7,908 |
| *Cumberland, Md.... | 63,639 | 2,488,376 | 1,899,985 |
| *Barclay, Pa..... | 2,727 | 144,217 | 148,373 |
| *Broad Top, Pa.* | | | |
| H. & Broad Top.. RR. | 8,519 | 257,582 | 297,431 |
| *Clearfield Region, Pa.* | | | |
| Snow Shoe ..... | 3,389 | 127,795 | 84,340 |
| Karthaus (Keating). | 3,250 | 142,815 | 109,188 |
| Tyrone & Clearfield.. | 56,064 | 2,475,237 | 1,670,291 |
| Tipton..... | 427 | 13,060 | ..... |
| *Alleghany Region, Pa.* | | | |
| Gallitzin & Mountain | 14,558 | 744,496 | 534,071 |
| *Pocahontas Flat Top Coal.* | | | |
| Norf'k & West. Rlt... | 19,264 | 879,715 | 675,020 |
| *Kanawha Region, W. Va.* | | | |
| Ches. & Ohio RR.... | 130,000 | 1,098,942 | 967,000 |
| Total..... ..... | 202,669 | 8,389,055 | 6,393,707 |

* Tons of 2240 lbs.
† Estimated.

WESTERN SHIPMENTS.

| | | | |
|---|---|---|---|
| *Pittsburg Region, Pa.* | | | |
| West Penn RR..... | 7,257 | 236,399 | 255,490 |
| Southwest Penn. RR.. | 1,763 | 89,566 | 131,164 |
| Pennsylvania RR.... | 2,908 | 163,041 | 217,592 |
| *Westmoreland Region, Pa.* | | | |
| Pennsylvania RR..... | 32,073 | 1,224,561 | 948,808 |
| *Monongahela Region, Pa.* | | | |
| Pennsylvania RR..... | 9,440 | 328,850 | 309,910 |
| Total..... ..... | 53,444 | 2,042,417 | 1,862,964 |
| Grand total..... | 256,113 | 10,431,472 | 8,256,671 |

**Production of Coke** on line of Pennsylvania RR. for week ended October 15th, and year from January 1st.

Tons of 2000 pounds.

| | 1887. Week. | 1887. Year. | 1886. Year. |
|---|---|---|---|
| Tyrone & Clearfield.. | ... | 1,735 | ..... |
| Allegnany Region ... | 5,074 | 196,385 | 146,903 |
| West Penn. RR..... | 2,536 | 87,941 | 84,191 |
| Southwest Penn.RR . | 66,355 | 1,185,415 | 2,069,841 |
| Penn. & W. Region.. | 9,023 | 266,883 | 256,523 |
| Monongahela.. ... . | 3,362 | 96,873 | 111,183 |
| Pittsburg Region.... | .... | 38 | 15 |
| Snow-Shoe..... ... | 1,223 | 41,139 | 20,990 |
| Total..... | 87,573 | 1,876,409 | 2,689,646 |

### Anthracite.

The coal trade is booming, and notwithstanding the large output, 3,137,000 tons last month, stocks at shipping ports have been reduced 234,667 tons, and it is difficult to fill any large order for early delivery. Nevertheless, there is not the least danger of a "coal famine" or of any high prices.

Before long many markets will be closed, and there will be an abundance for all. We estimate the production of anthracite for the remaining months of the year as follows: October, 3,250,000 tons; November, 3,000,000 tons; December, 2,800,000 tons, or a total of 34,051,000 tons for the year, as compared with 32,136,362 tons in 1886, an increase of nearly 2,000,000 tons.

The Lehigh strike still continues, though some of Pardee's men are said to be at work, and about 100 of Coxe Brothers' men went to work yesterday at the Eckley colliery. Last night the strikers called on them and threatened them with swift vengance if they continued work, and to-day they did not put in an appearance at the mines.

This, however, indicates an approaching collapse of the strike, and the impression prevails that about the 1st of November the men will all go to work.

The Pennsylvania Coal Company, having been offered car facilities by the Lehigh Valley Railroad, has commenced sending some of its coal to Perth Amboy. This company is said to be selling some stove and chestnut coal at the Pittston breakers at $3 a ton. Here it is said to quote $4.50 for stove and nut, f.o.b.

The standard prices for free-burning coals, f.o.b. New York shipping ports, may be quoted as: Grate, $3.80; Egg, $4.10; Stove, $4.35@$4.50; Nut, $4.25 @$4.40; Pea, $3.

Mr. John H. Jones, official accountant, has sent us the following statement of the anthracite coal tonnage for the month of September, 1887, compared with the same period last year. This statement includes the entire production of anthracite coal, excepting that consumed by employés, and for steam and heating purposes about the mines·

| COMPANIES. | S'pt'mb'r, 1887. | September. 1886. | Difference. |
|---|---|---|---|
| Phila. & Reading RR... | 736,302 | 591,709 | Inc. 144 593 |
| Central RR. of N. J.... | 291,543 | 492,518 | Dec.101,004 |
| Lehigh Valley RR..... | 471.821 | 533,112 | Dec. 61.291 |
| Del., Lack. & West. RR. | 596,614 | 452 371 | Inc. 144 243 |
| Del. & Hud. Canal Co.. | 404,778 | 292,832 | Inc. 111,946 |
| Pennsylvania RR..... | 331,039 | 322,285 | Inc. 8,753 |
| Pennsylvania Coal Co. | 148,951 | 155,751 | Dec. 6,801 |
| N. Y., L. E. & W. RR... | 56,606 | 55,864 | Inc. 742 |
| Total ..... ..... | 3,137,654 | 2,896,472 | Inc. 241,182 |

| COMPANIES. | For year 1887. | For year. 1886. | Difference. |
|---|---|---|---|
| Phila & Reading RR... | 5,366,257 | 4,606 881 | Inc. 759,376 |
| Central RR. of N. J.... | 3,652,048 | 3,504 018 | Inc. 148,030 |
| Lehigh Valley RR..... | 4,701,675 | 4,293,960 | Inc. 407.715 |
| Del., Lack. & West.RR. | 4,078,576 | 3,615,260 | Inc. 463.266 |
| Del. & Hud. Canal Co. | 2,793,595 | 2,494,245 | Inc 299.350 |
| Pennsylvania RR ..... | 2,748.025 | 2,521,884 | Inc. 226,141 |
| Pennsylvania Coal Co.. | 1,096,809 | 974.566 | Inc. 122.243 |
| N. Y., L. E. & W. RR.. | 561.514 | 524,384 | Inc. 40,130 |
| Total..... ..... | 25,001,450 | 22,535,198 | I. 2,466,252 |

The stock of coal on hand at tide-water shipping points, September 30th, 1887, was 394,748 tons; on August 31st, 1887, 629,415 tons; decrease, 234,667 tons.

### Bituminous.

There is nothing new in this trade. The market is active and prices firm, at $3.50 per ton alongside, with a little more asked, especially by those who have none to deliver.

The Pocahontas coal is still coming to this market, more than 5000 tons having already arrived here. It will continue to be sent here while the market will take it at $3.50 a ton.

From the West we hear of active markets and strong prices everywhere; but so far as the upper lake ports are concerned, the falling off in iron ore production by the stoppage of many of the mines will give easier freights to coal, so that no famine need be feared there any more than here.

**Boston.** Oct. 20.

[From our Special Correspondent.]

The market is about at a standstill for anthracite coal. Most of the companies have nothing to sell, save at prices way beyond the ideas of any save those who have been caught short of coal. There are not many such, but they have to pay $4.50 f.o.b. for Stove in New York, $4.25@$4.35 for Egg, and $4.15 for Broken. The stock of broken available for quick shipment is limited to one or two companies, more particularly the D. & H. There is practically no Lehigh coal to be had. Most retailers are fairly supplied, but the demand from those who have to receive coal now is greater than the supply, and every thing is in seller's favor.

Complaints of a short supply of bituminous coal multiply, and prices are very firm at $2.50@$2.60 f.o.b. Only an occasional lot can be had under $2.60. A scarcity of vessels exists at the lower ports, the loudest complaint coming, as before, from Baltimore. We quote rates, exclusive of discharging: New York, 75@85c.; Philadelphia, 95c.@$1.05; Baltimore, $1.15 @$1.25; Newport News and Norfolk, $1@$1.15.

The advanced prices at retail noted last week are well maintained by dealers, and trade is rushing. Delivered prices are: Stove, $6.25; Egg, $6; Furnace, $5.75; Nut, $6.25; Franklin, $7.50; Lehigh Egg, $6.25; Furnace, $6. Wharf prices are 50 cents less than the foregoing.

**Buffalo.** Oct. 20.

[From our Special Correspondent.]

Notwithstanding the opinion expressed by a merchant last week, it appears that there are no indications that the short supply of coal is of a temporary character. My belief is that the scarcity will continue all fall and next winter. The general outcry for freight cars still continues, and is in fact a chronic difficulty. It is noticeable that the stocks at tidewater shipping points on October 1st show a decrease from September 1st of about 250,000 tons, notwithstanding the increase in the year's production is about ten times that quantity. The demand from all Western and Northwestern points continues very great, dealers there having neglected to provide themselves with supplies early in the season.

Not knowing what the other companies are doing, it is a fact that the Delaware & Hudson Canal Company have withdrawn their quotations since October 15th, and until further notice their sales of coal will be made subject to such prices as may be agreed upon at time of sale.

A dealer remarked just now: "The demand for anthracite coal is more than sharp; it is pressing in every direction."

Bituminous coal unchanged. Demand excellent, supply limited.

Coke without new features.

The lake freight question is the most interesting topic just now. Vessel men are anxious to get away from this port and grumble very much at the light supply of coal at our docks and chutes. Chicago boats are trying to make three more round trips this season, and their owners feel that there should be no delay in loading here or unloading at Chicago and other ports, as storms may be expected and long voyages the rule probably. Up to October 1st this season, forty-one new propellers and three schooners have been added to the lake marine, giving additional registered tonnage of 51,289, at a cost of $1,344,000. On Tuesday market for Lake Michigan freight demoralized and lower in consequence of the large accumulation of vessels and deficiency of coal. Nothing offered for Lake Superior ports. Yesterday an unsettled feeling prevailed, and little business done. This morning the bottom fell out, and vessel tonnage was offered at $1 for Chicago, $1.10 for Milwaukee, and 75c. for Lake Superior ports. The going rates for the week were as follows: $1.35@$1.25@$1.20@$1 to Chicago, $1.35@$1.10 to Milwaukee, 45@50c. to Detroit and Toledo; on private terms, or about 75c. to Duluth and Superior; 90c. to Purt Huron and Port Arthur; $1.25 to Menominee; 50c. to Sandusky and Amherstbery; 75c. to St. Clair and Cheboygan; $1.45 to Racine; $1.25 to Marquette and Green Bay.

The shipments of coal westward by lake from October 13th to 19th, both days inclusive, aggregated 84,960 net tons, namely, 42,310 to Chicago, 24,370 to Milwaukee, 1900 to Detroit, 2080 to Toledo, 7100 to Duluth, 1000 to Marquette, 950 to Racine, 800 to Port Huron, 650 to Green Bay, 540 to Sandusky, 600 to Cheboygan, 480 to Port Arthur, 300 to Amherstbery, 530 to Menominee, 500 to St. Clair and 150 to Port Dover. Total for the season to date, not including vessels from Tonawanda, 1,425,637 net tons. Coal charters by canal for the past week comprise 1 load to Syracuse, gross, at 60c. and 1 load to Lockport, net, at 30c., both free on and off. Nominally $1 to Albany and $1.40 to New York per net ton, captain to pay loading and unloading. Receipts of coal by canal for second week in October, 3139 net tons; shipments, 236 net tons.

**Pittsburg.** Oct. 20.

[From our Special Correspondent.]

*Coal.*—Mining and shipping are still suspended, one for the want of empties to load, the other for the want of water. Cincinnati, Louisville and other markets that depend on water for their supply are showing considerable anxiety on the subject. In 1854 there was no fall rise in the Ohio until December 26th. Coal sold at Cincinnati at 40@50c. per bushel; prices at present, 9½@10c. Price of coal in the pools: Price of coal f.o.b., first pool, $4.50; second pool, $4.25; third pool, $3.65; fourth pool, $3. Coke at ovens, per ton: Blast-furnace, $2; Crushed, $2.60; Foundry, $2.60.

*Coke.*—The scarcity of cars continues. Complaints are increasing. There don't seem to be any remedy. Somebody is certainly responsible. As Boss Tweed used to say, "What are you going to do about it."

## FREIGHTS.

The latest actual charters to Oct. 20th, per ton of 2240 pounds:

**From New York to:**—Bath, Me.. 90*; Beverly, 90*; Boston, 80*; Bridgeport, 75; Bristol, 85@90; Cambridge, Mass., 80*3c.; Cambridgeport, 80*3c.; Chelsea, 80*; Com. Pt., Mass., 85*; E. Boston, 80*; E. Cambridge, 80*3c.; E. Greenwich, 90; Fall River, 85; New Bedford, 90; Newburyport, 95*; New Haven, 75; New London, 80; Newport, 85; Norwich, 85; Portsmouth, N. H., 90*; Providence, 85@90*; Quincy Point, 90*; Saco, 110*; Salem, 80*.

**From Philadelphia to:**—Alexandria, 85; Annapolis, 60§; Baltimore, 60§; Boston, 95@1.05*; Brooklyn, 90§; Cambridge, Mass., 1.00@1.05; Charleston, 75; Charlestown, 95@1.05*; Com. Pt., 95@1.05; E. Boston, 95@1.05*; E. Cambridge, 95@1.05*; Galvestoo, 2.50*; Gardiner, Me., 1.05*; Georgetown, 85; Gloucester, 1.05*; Lynn, 1.05@1.25; Newark, 1.90§; New Bedford, 90@1.00*; Newburyport, 1.10*; New York, 90§; Norfolk, Va., 60; Portland, 95@1.05; Portsmouth, N. H., 1.05@1.15*; Richmond, Va., 75; Salem, 1.05*; Savannah, 90@1 00; Troy, 1.10§; Washington, 85; Williamsburg, 90§; Wilmington, 85.

**From Baltimore to:**—Bangor, 1.20; Bath, 1.20; Boston, 1 20; Bridgeport, 1.05; Bristol, 1.10; Brooklyn, 1.00; Charleston, 80@90; Fall River, 1.00; Galveston, 2.75; New Bedford, 1.05; Newburyport, 1.30; New Haven, 1.05; New London, 1.05; New York, 1.00; Portland, 1 20; Portsmouth, N. H., 1.25; Providence, 1.05; Salem, 1.15; Savannah, 1.00@1.10; Somerset, 1.05; Williamsburg, N. Y., 1.00; Wilmington, 1 00.

* And discharging. † And discharging and towing. 3c. per bridge extra. § Alongside. ‖ And towing up and down. ¶ And towing. †† Pilotage. ** Below bridge. *** Old B. L.

## MARKETS.

New York, Friday Evening, Oct. 21.

**Prices of Silver per ounce troy.**

| Oct. | Sterling exchange | Lond'n Pence. | N. Y. Cents | Oct. | Sterling exchange | Lond'n Pence. | N. Y. Cent. |
|---|---|---|---|---|---|---|---|
| 15 | 4.84⅛ | 44 1-16 | 95⅛ | 19 | 4.85 | 44 1-8 | 95¾ |
| 17 | 4.84⅛ | 44⅛ | 95⅜ | 20 | 4.85 | 44 3-16 | 95¾ |
| 18 | 4.85 | 44⅛ | 95¾ | 21 | 4.85 | Nom | 95⅝ |

The market closed with but little demand from other side at current rates.

**Copper.**—The inactivity reported last week has continued to a certain extent, and prices of Lake copper declined somewhat further in the beginning of the week to 10·32½c., but a firmer tone has now set in and nothing can be bought at 10·35c. In futures we have not heard of any business. The statistics in Europe again show a decrease of 300 tons in the stocks for the first fortnight of this month, and advices from there uniformly report a very good business both for home trade and for export, the only brands which are not moving being Chili Bars, which remain stationary at about £39 17s. 6d. to £40 4s. for cash, and £40 10s. to £40 12s. 6d. for three months forward; English tough, £43 10s. to £44; Best Selected, £43 10s. to £45 15s.; Strong Sheets, £50; India Sheets, £47 10s. to £47 15s.; casting brands are relatively scarce and quoted 10c. to 10 10c., though we have heard of a recent sale under exceptional circumstances at a little below 10c.

The Calumet & Hecla has now arrived at its full normal production, but it can not make up any of the lost ground, so that its entire production will be about 3,500,000 lbs. less than it was in 1886.

Furnace material is quite scarce. Clark's Colusa mine, at Butte, is producing no ore, and the stocks of ore on the dump are about worked up. The Boston & Montana Copper Company is not mining any ore, and is smelting the old stock piles, making a matte of 50 to 55 per cent. This company does not expect to make any considerable addition to its output this year.

Our list of exports of copper is unavoidably omitted this week, but in our next issue the two weeks will be given.

**Tin.**—This wildly speculative metal has fairly boomed during the week. The London prices advanced with bounds until they touched £117 for spot, but it has again dropped this afternoon to £115 for spot and £114 for futures.

Our prices here have also advanced, and are now quoted at 25c. for Spot, 24·70c. for October, 24·40c. for November, 24¼c. for December, and 24c. for January tin.

The business done here early in the week was very heavy, and the sudden jump in prices did not stop it. About 600 tons were sold on the Exchange during the week.

**Lead.**—This article remains very unsettled. About 500 to 600 tons have changed hands during the week at prices down to 4·20, with a slight recovery at the close to 4·25. The trade is holding aloof, and the business transacted is confined to actual wants. Sales have aggregated about 300 tons.

Messrs. Everett & Post, of Chicago, telegraph to-day as follows:

Market quiet and dull; prices unchanged. Spot is quoted at 4·05@4·10. Futures, 4·00. Offerings are very light and demand is from hand to mouth only. Buyers, expecting, a decline, are holding off, and buy only for immediate want.

Messrs. John Wahl & Co., St. Louis, telegraph to-day as follows: The recent established low price, 4, has caused a great deal of inquiry from all channels. In consequence market is just a little stiffer at the close.

The St. Louis *Globe Democrat* of Oct. 14 publishes an account of the probable organization of the lead smelting firms of the West, with a view to forming a compact to sustain the American lead markets. The movement has been very quietly pushed to a successful issue, and the details are now being perfected. It is known as the National Lead Trust Company, with headquarters at St. Louis.

Among the chief promoters are Thompson & Co., owners of the St. Louis Smelting and Refining Company; Gustav Billings, of the Socorro (N. M.) reduction works; the owners of the Harrison Reduction Works of Leadville, several Utah smelters and plant-owners, the St. Louis white lead manufacturers, and the principal lead ore dealers of Zacatecas and the City of Mexico, Mexico.

W. H. Gregg, President of the Southern White Lead Company, of St. Louis, said that his concern would not enter the trust, and that he knew of five of the largest white lead companies in the United States that are not in the trust, and has reason to believe that many others were not. He named the Collier Company, of St. Louis; the Atlantic White Lead Company, of New York; John T. Lewis & Bro., of Philadelphia; and the Eckstein White Lead Company, of Cincinnati. He said the business was certainly demoralized and overdone, there being thirty-two corroding firms in the United States.

**Spelter.**—No change. Domestic 4·55 to 4·65. Foreign spelter is obtainable at 5·10@5·20c., according to brand. London remains a firm and active market, with £15 12s. 6d. for ordinary and £15 15s. to £15 17s. 6d. for specials.

*Sheet Zinc* is 6⅛@6¾c.

**Antimony.**—The market continues firm. Hallett's, 8·80@8⅞c.; Cookson's, 9¼@9⅜c.

Domestic Antimony is offered at 8¼c.

**Quicksilver.**—The English market is very firm at £7 12s. 6d., the price ruling here being $42½ per flask.

**Nickel** is somewhat firmer, and continues in good demand, the present quotation being about 65c.

**Quicksilver.**—The English market is very firm at £7 15s., the price ruling here being $42½ per flask.

**Chemicals.**—Nothing unusual has occurred this week to break the monotony or relieve the dull tone that prevails in our market, and at the same time characterizes the operations of the other side. We have little news to give and nothing to say of this week that could not equally well have been said of the last. The general attitude of all those concerned in the trade tends more and more to confirm the explanations we have already given, and to show that the want of activity, or "snap," so characteristic of our business men, arises from no lack of interest or falling off in the actual consumptive demand, but from sheer perplexity, and hesitation on the part of the wholesale buyers who supply that demand to make forward contracts. They are prepared for many surprises, and, as they say themselves, are so convinced that the rise or fall of prices in the immediate future depends so wholly upon the success or failure of certain processes now under experiment that they think it wisest to be satisfied with a mere "hand to mouth" business, and to purchase only what is needed to fill their pressing orders.

During the last few days, the only articles that have commanded any attention are bleaching powder and sal soda, and while it can not be claimed even for these that any large transactions have taken place, both have displayed considerable firmness, and an upward tendency. What absolute reason there is for any such tendency other than the absence of heavy stocks and a carefully arranged production to only keep pace with the demand, it is difficult to say, but the fact remains, nevertheless, and must be chronicled. Both Liverpool and Newcastle soda ash come forward in a slow, methodical way, quite in keeping with the general tone, some 200 or 300 tons having been unshipped during the week, with sales to about an equal amount reported at prices varying from 1·18c. to 1·20c., in accordance with strength and brand. Refined alkali is somewhat freely demanded by glass makers, principally high grades, but no very large transactions have come under our notice, only small sales being spoken of, at prices ranging from $1.22 for 48 per cent to $1.15 for 58 per cent, the preference being given to the domestic product when obtainable, on account of recognized superiority in quality. Great dullness characterizes caustic soda, although prices are pretty firmly maintained at the figures given in our general price list on another page. From Liverpool we learn that very much the same kind of feeling prevails in the English markets as with ourselves, sellers of best brands being nominally firm in their demands of £6 10s. for 60 per cent., and £7 7s. 6d. for 70 per cent. qualities. We feel tolerably certain, however, that at a reduction of from 5s. to 7s. 6d., most makers would be very glad to book large orders, if they were offered the chance.

No movement has taken place in brimstone, and there is no change to record in the nominal price of sulphuric acid, all business in the latter being of a comparatively retail character.

The market for fertilizing chemicals is absolutely featureless.

## IRON MARKET REVIEW.

New York, Friday Evening, Oct. 21.

The Lehigh coal strikes continue to effect the quality of the pig-iron made in that section. Good brands of foundry pig remain scarce and in demand, but with no advance in price. The Thomas Iron Co. will close the year about twenty thousand tons behind hand in their deliveries of orders. Otherwise the pig-iron market is unchanged and quotations remain the same. We note sales of Southern foundry iron in this market aggregating 2200 tons for 1888 delivery, beginning in January. There is some inquiry for Scotch pig, which has a firmer tendency, chiefly owing to an advance in freights from 5s. to 7s. 6d.

Bessemer pig and spiegel are almost neglected, and quotations are nominal. No new business is reported in Bessemer blooms, billets or wire rods. Steel rails have been very quiet, though we hear of some orders likely to be placed before long. The orders for next year's delivery are small, and buyers are apparently holding off. Eastern companies continue to quote $34 @$35 at mill, the latter figure, however, being only for small orders and susceptible of being shaded by responsible buyers.

The makers of structural iron continue very busy delivering orders, and are filled up for probably six months ahead.

The quotations for wrought iron pipe are unchanged, although it is expected that prices will shortly be advanced. Old rails are in a little more demand, $22 being offered for tees to arrive, and $22.25 being asked. They could not be imported for $22 50, and current quotations are on lots to arrive, which the importers do not wish to store. For this week's quotations we refer to our "Weekly Register of Current Quotations."

### The Failure of Thos. J. Pope & Bro.

Mr. Samuel W. Briggs, assignee of Messrs. Thos. J. Pope & Bro., has filed a detailed statement of that firm's affairs, of which the following is a summary: Creditors holding security of one character or another, $243,276.06. Final statement—Nominal: Assets, $544,371.19; pledged assets, $259,021.18; total, $803,392.37. Actual: Assets. $347,581.96; pledged assets, $242,625 68; total, $590,207.64.

From the $347,581.96 above there should be deducted about $250,000, which leaves about $97,500, which the assignee will receive.

Liabilites: Open accounts, $127,039.79; bills payable, $280,239.93; creditors without security, $407,279.72; creditors holding security, $243,276.06; total, $650,555,78. Contingent liabilities on discount notes, $151,276.37.

Among the unpledged assets are a number of claims in dispute and accounts with insolvent firms. The largest of these is against the Orford Copper and Sulphur Company for $206,451.21, valued by the assignee at $205,451.21. The claim is made against them for notes made to the order of the Orford Company for their accommodation by paper to be taken up by the Orford Company, and for notes which were given for copper to be delivered in July, which was never delivered. The difference is for collection.

Against the Orford Sulphur and Copper Company Thomas J. Pope & Bro. have a claim of $50,000. which the assignee states will be disputed, and will have to be recovered by action, and counter claims for copper sold and not paid will be interposed.

### Louisville. Oct. 18.

[Reported by Geo. H. Hull & Co.]

The tone of the market has improved during the past week and a number of inquiries have been made for lots somewhat larger than have been called for during the few weeks preceding. Some difficulty, however, is experienced in having large orders booked for early delivery, as most of the principal furnaces have sold their product for the remainder of the year. The sales of some large speculative lots which have been held for a long time have made it probable that better prices will prevail. Foundry irons are not called for to any extent, the demand being principally for mill grades. The feeling in business circles as to the money propects is considerably easier than at date of our last report. It is not expected that any of the new furnaces will go into blast until considerably later than the beginning of next year. Buyers have postponed their purchases so long that those now being made are handled almost entirely by telegraph, and in many cases the iron barely reaches the consumer before it is actually needed for immediate use in mills and foundries. Current quotations for cash will be found in our weekly register of prices.

### Philadelphia. Oct. 21.

[From our Special Correspondent.]

The only significant sales in crude iron made this week were in No. 1 Foundry and in special brands of gray forge, which brought outside figures. The general tendency, however, is to withhold orders from the market, and where sales are made of ordinary brands, they are made at a slight reduction from quotations of two weeks ago, as there is no general drop in prices. Buyers think it is a question only of a few days when a fair brand of forge can be had at $16.50 and standard No. 1 Foundry at $21. Some fair brands are already going at these figures. First class brands, however, are held by strong hands at full prices, but they are not receiving inquiries or orders. The production of crude iron is heavy enough to lead to the impression in trade circles that a reaction will set in. The margins now are very light, and if the coal strike keeps on anthracite and coke will be higher. Coke cars are scarce and anthracite is far from being plenty. Four or five furnaces may blow out within ten days; the action in this matter to be determined by the looks of things at the end of next week. In foreign material brokers have several inquiries to-day, but there is a difference of about 50 cents per ton. Billets would sell well at $30. Freights have advanced, and may go higher. Blooms are not asked for, but slabs are wanted at concessions from current rates. Muck bars are dull this week, although the mills have orders enough to carry them along for some time. Merchant bar, both medium and refined, is quite active, and mills are picking up a good deal of business in small lots, sufficient to keep confidence well established. The average price paid this week for a fair iron is 2c., but refined, in small lots, is quite firm at 2·10c. Several 100 and 200 ton lots have been sold by Western makers. This crowds down any upward tendency that might possibly show itself. Nail quotations have not been changed, but only small lots are selling, the policy of buyers and builders being to fill current requirements only. The plate and tank iron makers report a better demand this week than last. Some large consumers have about concluded to cover winter requirements, material to be delivered from time to time, as wanted. A good deal of tank has been sold. Steel plates are also moving well. Large transactions were made at slight concessions, but small lots are selling at full quoted rates. Skelp iron is moving along quite freely, and pipe mills report a steady demand. Merchant steel-makers have no news to give, but are busy. Steel rails are sold at the quoted rates in small lots, but the aggregate of business is very trifling. Nothing can be done at present to stimulate the steel rail trade; orders for next year's delivery are very light, but makers profess to regard the present lull as only temporary. Old rail quotations remain unchanged, and only small lots are selling. The indications are that two or three weeks will elapse before there is much change in the situation.

WEEKLY REGISTER OF

## CURRENT QUOTATIONS.

This list is the result of careful compilation and is destined to meet the demands of all classes of subscribers. The prices quoted are those actually ruling in our own and foreign markets. Manufacturers and importers will please give notice of all modifications not later than Friday noon each week.

### CHEMICALS.

| | |
|---|---|
| **Acid**—Sulphuric, 60°, per 100 lbs.. | 80 |
| Sulphuric, 66°, per 100 lbs | 90 |
| Hydrofluoric, per 100 lbs | 95 |
| Muriatic, 18°, per 100 lbs | 1 15 |
| Muriatic, 20°, per 100 lbs | 1 25 |
| Nitric, 36°, per 100 lbs | 4 00 |
| Nitric, 42°, per 100 lbs | 6 00 |
| **Alkali**—36 p. c | 1.10 |
| Refined, 58° | 1.15 |
| **Alum**—Lump, per lb | 1¾ |
| Ground, per lb | 2 |
| Per ton, Liverpool lump | £5 |
| Sulphate of Alumina | £4 12 0 |
| **Aluminum**—(Metallic), per lb | 12 00 |
| **Ammonia**—Sulph., per 100 lbs.. | 3 00 |
| Carb., per lb | 7¾ |
| Muriate, per lb | 7 |
| **Antimony**—Hallet's, per lb | 8¼ |
| Cookson's, per lb | 9¼ |
| **Arsenic**—Metallic, per lb | 3 |
| White, powdered, per lb | 2¾ |
| White, glass | |
| Red, per lb | 6½ |
| Plymouth, white, per ton | £21 0 0 |
| **Asbestos**—American, p. ton | 20 00 |
| C. i. f. L'pool, Italian, p. ton | £18 0 0 |
| **Asphaltum**—P. ton | 13.00 |
| **Barium**—(Metallic), per lb | 975.00 |
| **Barytes**—Sulph., Am. prime white, p. ton | 16 00 |
| Sulp'n., foreign, floated, p. ton | 19 00 |
| Sulph., off color, p. ton | 12.50 |
| Carb., lump, f.o.b. L'pool, per ton | £3 0 0 |
| No. 1, casks, Runcorn " | £4 10 10 |
| No 2, bags Runcorn " | 3 15 0 |
| **Bismuth**—(Metallic), per lb | 2.40 |
| **Bleach**—Over 35 p. c., per lb | 2 |
| **Borax**—Per lb | 6¼ |
| Refined at Liverpool, per ton | £26 10 0 |
| **Bricks**—Pale, per 1,000 | 5.00 |
| Jerseys, per 1,000 | 7.50 |
| Haverstraw, per 1,000 | 8.50 |
| Front bricks, per 1,000 from | 10.00 |
| **Brimstone**—*See Sulphur.* | |
| **Bromine**—Per lb | 36 |
| **Building Stone**—Amherst freestone, per cu. ft., from | 75 |
| Brownstone, per cu. ft., from | 1 00 |
| Granite, rough, per cu. ft., from | 45 |
| **Cadmium**—(Metallic), per lb | 1 45 |
| **Calcium**—(Metallic), per oz | 150.00 |
| **Cæsium**—(Metallic) | |
| **Cerium**—(Metallic) per oz | 168 |
| **Cement**—Rosendale, per bbl | 1 00 |
| Portland, American, per bbl | 2 00 |
| Portland, foreign, per bbl | 2 25 |
| **Chalk**—Per ton | 3.00 |
| Precipitated, per lb | 4 |
| **China Clay**—English, per ton | 18.50 |
| Southern, per ton | 13.50 |
| **Chrome Yellow**—Per lb | 8 |
| **Chromium**—(Metallic), per lb | 200.00 |
| **Cobalt**—(Metallic), per lb | 7.00 |
| **Cobalt**—Oxide, per lb | 2.15 |
| **Copper**—Sulphate English Works, per ton | £13 10 0 |
| Precipitated, at English Works, per unit | 7 6 |
| **Copperas**—Common, per lb | $ 70 |
| Best, per lb | 1.20 |
| Liverpool, per ton, in casks, £2 | 1.20 |
| **Cream of Tartar**—Am. 99 p. c. per lb | 35 |
| Powdered, 99 p. c | 36 |
| **Didymium**—(Metallic), per oz | 160.00 |
| **Emery**—Grain, per lb | 3½ |
| Flour, per lb | 2½ |
| **Erbium**—(Metallic), per oz | 140.00 |
| **Feldspar**—Ground, per ton | 14.00 |
| **Fuller's Earth**—Lump, per bbl. | 95 |
| Powdered, per lb | 2 |
| **Gallium**—(Metallic), per oz | 3250.00 |
| **Glucinum**—(Metallic) | |
| **Green**—Emerald, per lb | 25 |
| Brunswick | |
| **Gypsum**—Calcined, per bbl | 1.25 |
| **Indium**—(Metallic), per oz | 158.00 |
| **Iodine**—Resublimed | 3.50 |
| **Iridium**—(Metallic), per lb | 700.00 |
| **Kainit**—Per ton | 7.25 |
| **Kaolin**—*See China Clay.* | |
| **Lanthanum**—(Metallic), per oz | 175.00 |
| **Lead**—Red, per lb | 6 |
| White, American, in oil, per lb | 6½ |
| White, English, per lb | 7½ |
| Acetate, or sugar of | 12 |
| **Litharge**—Powdered, per lb | 5½ |
| English flake, per lb | 9 |
| **Lithium**—(Metallic), per oz | 160.00 |
| **Magnesite**—Syrian, per ton | 15.00 |
| **Magnesium**—Per lb | 4.00 |
| **Mineral Wool**—Per lb | 2 |
| **Molybdenum**—(Metallic) per lb | 6.00 |
| **Nickel**—(Metallic), per lb | 125.00 |
| **Niobium**—(Metallic), per oz | 128.00 |
| **Osmium**—(Metallic), per lb | 640.00 |
| **Palladium**—(Metallic), per lb | 512.00 |
| **Platinum**—(Metallic), per lb | 148.00 |
| **Phosphate Rock**—S. Carolina, per ton f. o. b. Charleston | 5.75 |
| Ground, per ton f. o. b. New York | 10.00 |
| Canadian Apatite, lump, f. o. b. at shipping port, per unit | 24 |
| **Manganese**—lump, c. i. f. Liverpool, per ton | £3 2 6 |
| Per unit, up or down | £0 1 6 |
| Ground | £6 0 0 |
| Metallic, per lb | 1.10 |
| **Mercury**—*See Quicksilver.* | |
| **Mercuric-Chloride**—(*Corrosive Sublimate*) per lb | 55 |
| **Phosphorus**—Per lb | 70 |
| **Plumbago**—Ceylon, per lb | 4 |
| American, per lb | 7 |
| London, per cwt | £0 15 0 |
| **Potassium**—Metallic, per oz | 2.00 |
| Cyanide, per lb | |
| Bromide, per lb | 37 |
| Chlorate, per lb | 14 |
| Carb. per lb | 5 |
| Caustic, per lb | 7½ |
| Iodide | 2.10 |
| Muriate, per 100 lbs | 1.70 |
| Nitrate, refined, per lb | 6 |
| Bichromate, per lb | 10½ |
| Sulphate, per 100 lbs | 1.10 |
| Yellow Prussiate, per lb | 19 |
| Red Prussiate, per lb | 42 |
| **Pumice Stone**—Selected lumps, per lb | 2½ |
| Original cks., per lb | 1½ |
| Powdered, pure, per lb | 1¾ |
| **Pyrites**—Non-cupreous, per unit, sulph | 10 |
| **Quartz**—Ground, per ton | 18.00 |
| **Quicksilver**—Per lb | 53 |
| London, per flask of 75 Ho | £7 12s. 6d. |
| **Rotten Stone**—Powdered, per lb. | 8½ |
| Lump, per lb | 5 |
| Eng., powdered, per ton | £4 |
| Lump, per ton | £5 |
| **Rhodium**—(Metallic), per lb | 512 00 |
| **Ruthenium**—(Metallic), per oz | 112.00 |
| **Rubidium**—(Metallic), per oz | 200.00 |
| **Salt**—Liverpool, ground, per bbl. | 70 |
| Turk's Island, per bbl | 25 |
| **Salt Cake**—Per 100 lbs | 60 |
| **Saltpeter**—Crude, per lb | 4½ |
| Refined, per lb | 6 |
| **Silicium**—(Metallic) | |
| **Slate**—Purple and green roofing, per 100 sq ft | 6 00 |
| Red roofing, per 100 sq ft | 15.00 |
| Black, roofing, per 100 sq. ft. | 5 00 |
| **Soda Ash**—Carconate, 48 p. c., per 100 lbs | 1.20 |
| Caustic, 48 p. c., per 100 lbs | 1.22 |
| Caustic, 70 p. c., per 100 lbs | 1.13 |
| Sal, English, per 100 lbs | 1.00 |
| Sal, American, per 100 lbs | 1.15 |
| Nitrate, per 100 lbs | 1.95 |
| **Sodium**—(Metallic) per lb | 4.50 |
| **Strontium**—(Metallic), per oz | 128.00 |
| Nitrate, per lb | 10½ |
| **Sulphur**—Roll, per lb | 1½ |
| Flour, per lb | 1¾ |
| Crude Brimstone, seconds, per ton | 20.00 |
| Crude Brimstone, thirds, per ton | 19.00 |
| **Talc**—Ground French, per lb | 1¼ |
| Domestic, per lb | 6 |
| Domestic, per ton | 15 00 |
| C. i. f. Liverpool, per ton | £4 5 0 |
| **Tannin**—Pure, per lb | |
| **Tantalum**—(Metallic) per oz | 144.00 |
| **Tellurium**—(Metallic) per oz | 9 00 |
| **Thallium**—(Metallic) per oz | 3 00 |
| **Titanium**—(Metallic) per oz | 32.00 |
| **Thorium**—(Metallic) per oz | 272.00 |
| **Tungsten**—(Metallic) per oz | 4.00 |
| **Vanadium**—(Metallic), per oz | 320.00 |
| **Vermillion**—American, per lb | 50 |
| English, per lb | 65 |
| **Vitriol**—(Blue), Ordinary, per lb | 4½ |
| Extra, per lb | 4¾ |
| **Yttrium**—(Metallic), per oz | 144.00 |
| **Zinc Oxide**—American, Dry, per lb | 4¼ |
| Antwerp, Red Seal, per lb | 5½ |
| Paris, Red Seal, per lb | 6⅛ |
| **Zirconium**—(Metallic), per oz | 240.00 |

### IRON AND STEEL.

#### New York Prices.

**American Pig-Iron**, No. 1. $21@$21.50 at tidewater.
No. 2 $18 50@$19.50 " "
Forge $17@$17.50 " "

**Scotch Pig**—Coltness $21.50@$21.75
Clyde 19.75@ 20.00
Dalmellington 19.75@ 20.00
Summerlee 21.00@ 21.25
Gartsherrie 21.00@ 21.25
Shotts 21.00@ 21.25

*By Cable to day to the Metal Exchange :*

| | |
|---|---|
| Scotch Warrants | 39s. 8d. |
| Coltness, at Glasgow | 51s. 6d. |
| Langloan, at Glasgow | 57s. 6d. |
| Summerlee, at Glasgow | 49s. 9d. |
| Gartsherrie, at Glasgow | 46s. 6d. |
| Glengarnock, at Ardrossan | 47s. 6d. |
| Dalmellington, at Ardrossan | 43s. |
| Eglinton, at Ardrossan | 41s. 6d. |

**Bessemer Pig**—
Foreign, nominally $19.75@$20.00
Domestic, $19 25 at Eastern furnaces.

**Spiegeleisen**—
English, 20 per cent $27 00
German, 20 per cent 26.25
" 30 per cent 31.50
Ferro Manganese 57.00

**Steel Blooms** $30.00@ 30 50
**Steel Billets** 30.00@ 30.50
**Steel Nail Slabs** 30 50 @ 31.00
**Steel Wire Rods** $40.00@$40.50
**Steel Rails**—
Heavy sections, at mill $34.00@$35.00
Light " " 37.50@ 42 00

**Structural Iron and Steel**—
Bridge Plate, at mill 2¼@2·3c.
Angles, at mill 2·3@2·6c.
Tees, at mill 2 6@2 8c.
Steel Angles, at mill 2·6@2·75c.
Beams and Channels, on wharf, 3·3c. base.

**Steel Plates**—
Tank and Ship, on wharf 2 85@2c.
Boiler Shell, on wharf 3 @3¼c.
" Flange, " 3½ @3⅝c.
" Fire-Box, on wharf 4 @4½c.

**Iron Plates**—
Common tank, on wharf 2·4@2·5c.
Refined tank, on wharf 2 5@2 6c.
Boiler shell, " 2·7@2 8c.
Boiler flange, " 3·7@3 8c.
Extra flange, " 4¼@4½c.

**Bar Iron**—
Refined 2@2·1c. base.
Common 1·8@2c. "

**Merchant Steel**—
American tool 7½@10c.
Special grades 10 @20c.
Crucible machinery 4½@6c
" spring 4 @4½c.
Bessemer machinery 2·7@3c.
" spring 2·7@3c.

**Cast-Iron Pipe**—
According to size $30 00@$36.00

**Wrought Iron Pipe**—List of Edw. Barr Co., Ltd., adopted Oct. 5, 1887.
Butt-Welded, Plain and Tarred, 50 per cent disc.; Galv., 40 per cent disc.
Lap-Welded, Plain and Tarred, 60 per cent disc; Galv., 45 per cent disc.

**Boiler Tubes**—55 per cent disc.; Casing, 50 per cent disc.

**Rail Fastenings**—
Spikes 2·3 @2·4c. delv'd
Angle Fish-bars 2·15@2·2c.
Bolts and Sq. Nuts 2·9 @ 3c.
" " Hex " 3·1 @3·2c.

**Wrought Scrap**—
Foreign *ex ship* $20.50@$21.00
No. 1 Yard 21.50@ 22.00

**Cast Scrap** $15.00@$17.50
**Old Car Wheels** 19.00@ 19 50
**Old Rails**—Tees 22 25@ 22.55
—Doubles 22 50@ 23.00
**Nails**—In car-load lots 2 00@ 2.00
—From store 2.05@ 2.10

#### Philadelphia Prices.

| | |
|---|---|
| Foundry No. 1 | $21.00@22 00 |
| Foundry No. 2 | 18.50@19 50 |
| Gray Forge | 17.00@17.50 |
| Bessemer Pig | 20.50@21.00 |
| Steel Rail Blooms | @31.50 |
| Foreign Bessemer | 20.50@ |
| Spiegeleisen | 27.00@27.50 |
| Scrap, Selected | 23.50@ |
| No. 1 | 21.00@22 00 |
| Cargo Scrap | 22.00@ |
| Muck-Bars | 31.00@31.50 |
| Merchant Iron | 2@2.10c. |
| Plate Iron | 2.30@ 2.50 |
| Tank Iron | 2 40@ 2 50 |
| Skelp Iron | 1.95@ 2.00 |
| Angles | 2.30@ |
| Beams and Channels | 3 30@ |
| Nails | 2.10@ 2 25 |
| Steel Rails | 36.00@38 00 |
| Old Rails | 23 50@24.00 |

#### Pittsburg Prices.

**Coke or Bituminous Pig**—

| | |
|---|---|
| Foundry No 1 | $20.00@20 50 |
| Foundry No. 2 | 19.00@19,50 |
| Gray Foundry No. 3 | 18.00@18.25 |
| " " No. 4 | 17.50@17.75 |
| White | 17.00@17.25 |
| Mottled | 17.00@17.25 |
| Silvery | 19.00@19.50 |
| Bessemer | 20 50@21.00 |

**Charcoal Pig**—

| | |
|---|---|
| Foundry No. 1 | 25.00@25.75 |
| Foundry No. 2 | 24.00@24.75 |
| Cold-Blast | 26.00@30.00 |
| Warm-Blast | 25.00@27.00 |
| 20 p. c. Spiegel | 29 00@ |
| Muck-Bar | 31.00@31.25 |
| Steel Blooms | 32.00@32.50 |
| Steel Slabs | 31.00@32.00 |
| Steel Crop Ends | @22.00 |
| Steel Bloom Ends | @21.50 |
| Steel Billets | 31.50@32.00 |
| Old Iron Rails | 25.25@25 75 |
| Old Steel Rails | 23.50@24.50 |
| No. 1 W. Scrap | 20 50@21.00 |
| No. 2 W. Scrap | 19.00@19.50 |
| Steel Rails | 37.00@38.00 |
| " light sections | 38.00@42 00 |
| Bar Iron, nominal | 1.90@ 2 00 |

Nails $2 net car lots.
Steel Nails $2 net car lots. Two per cent off for cash.

#### Louisville Prices.

**Pig-Iron**—

| | |
|---|---|
| So. Coke, No. 1 Foundry | $20.50@$21.00 |
| " " No. 2 " | 19.50@ 20.00 |
| " " No. 2½ " | 18. 0@ 19.50 |
| Hg. Rock Coke, No. 1 F'dry | 20.00@ 21.50 |
| " " Charcoal, No. 1 Foundry | 23.00@ 24.50 |
| So. Charcoal, No. 1 F'dry | 21.00@ 22.00 |
| Silver Gray, different gr'des | 17.50@ 19.00 |
| So. Coke, No. 1 Mill, Neutral | 17.50@ 18.50 |
| " " No. 2 " " | 17.00@ 18.00 |
| " " No. 1 Mill, Cold Short | 17.00@ 18.00 |
| So. Charcoal, No. 1 Mill | 18.00@ 19.00 |
| White & Mottled, diff't gr'des | 15 50@ 16 00 |
| So. Car-Wheel, St'rd Br'nds | 24 00@ 25.00 |
| " " Other " | 22.00@ 24.00 |
| Hanging Rock, Cold-Blast | 24 50@ 26.00 |
| " " Warm-Blast | 21.00@ 22.50 |

### STOCK MARKET QUOTATIONS

#### Baltimore Stock Quotations.

| COMPANY. | Bid. | Asked. |
|---|---|---|
| Atlantic Coal | $1.40 | $1.50 |
| Balt. & N. Co | .40 | .40@.45 |
| Big Vein Coal | | 1.00 |
| Conrad Hill | .10 | .20 |
| Diamond Tunnel | .40@.45 | .48 |
| George's Crk. C. | .85.00 | |
| Ore Knob | 05 | .10 |
| Silver Valley | 1 50 @1.55 | 1.65 |

Highest and lowest prices bid and asked during the week ending October 20th.

#### Birmingham, Ala., Stock Quot.

| COMPANY. | Bid. | Asked. |
|---|---|---|
| Ala. Conn. C. | | 100 |
| Bir. Min. & Mfg. | 125 | 175 @200 |
| Decat. L. Imp. & Fur. | 24 @ 25¾ | 26 @ 27½ |
| Decatur Min. L | 27 @ 29 | 30 @ 32 |
| Enterprise Mfg | | |
| Sloss I. & S. | | |
| * Sloss I. & S. | | 88 @ 90 |
| Sheffield C & I | 73½@+75 | 74¼@ 75 |
| Woodstock S&I | 50 | |

* Bonds. † Buyer 60 days.
Highest and lowest prices bid and asked during the week ended October 17th.

#### Deadwood-Dak. Quotations.

| Comp'y. | H. | L. | Comp'y | H. | L. |
|---|---|---|---|---|---|
| Bullion | .05 | .03½ | Ruby Bell | .05 | .05 |
| C'nt'e Sh't | .06 | .02 | Seabury | .18 | .10 |
| Ent'rp'se | .05 | .02 | Seg'eg'ted | .07 | .05 |
| Hester A | .06 | 03 | Silv'r Kid'e | .01½ | .00½ |
| Iron Hill | 3.50 | 2.95 | Sp'nish R. | .29 | .16 |
| Mona | .05 | .01 | U.S Grant | .10 | .01¾ |
| Mutual | .12½ | .09 | West Va | .10 | .10 |
| Rattler | .28 | .15 | | | |

Highest and lowest prices bid and asked during the week ended October 15th.

#### Pittsburg Stock Quotations.

| COMPANY. | H. | L. | Closing. |
|---|---|---|---|
| Bridgewater Gas | 99.00 | 98.00 | 99.00 |
| Chartiers Val. Gas. | 84.50 | 84.50 | 84.50 |
| Consignee Min. Co. | .60 | .60 | .60 |
| Forest Oil Co | 95.00 | 95.00 | 95.00 |
| La Noria Mining | 4.50 | 3.87½ | 4.00 |
| M'f'turers' Gas | 25.00 | 25.00 | 25 00 |
| Nat Gas Co., W. Va. | 102.00 | 102 00 | 102.00 |
| N. Y. & Cleve. Gas Coal | 45.00 | 40.00 | 42 00 |
| Ohio Valley Gas | 48.00 | 47 50 | 47.50 |
| Pennsylvania Gas. | 25.00 | 25.00 | 25 00 |
| Philadelphia Gas | 48.25 | 47.62½ | 48.00 |
| Pine Run Gas Co. | 47.87½ | 47.37½ | 47.87½ |
| Pleasant Valley | 54.00 | 48.00 | 48.00 |
| Tuna Oil Co | 65.00 | 65 00 | 65.00 |
| W't'h'se Air-Brake | 115.00 | 115.00 | 115 50 |
| W't'ghouse Brake | 52.00 | 52.00 | 52.50 |
| Westmoreland Cambria Gas | 51.00 | 51.00 | 51 00 |
| Wheeling Nat Gas | 27.00 | 25.50 | 27.00 |
| Yankee Girl Mining | 6.50 | 6.25 | 6.25 |

* Ex-dividend.
Highest and lowest prices bid and asked during the week ending October 20th.

#### London Quotations.

| COMPANY. | Highest. | Lowest |
|---|---|---|
| Alturas Gold, Idaho | 13s. 6d. | 12s 6d |
| Arizona Copper, Ariz. | £⅜ | £¼ |
| California Gold, Colo. | 9s. 6d. | 8s. 6d. |
| Carlisle, N. Mex | £1¼ | £1 |
| Charles Dickens, Id | 7s. | 6s. |
| Colorado United, Colo. | £1⅛ | £⅜ |
| Denver Gold, Colo. | 2s. 6d. | 1s. 6d. |
| Eberhardt, Nev | 7s | 6s. |
| Empire, Mont | £3 5-16 | £3 3-16 |
| Flagstaff, Utah | 6s. | 5s. |
| Garfield, Nev | £1¼ | £1⅛ |
| Gold Hill, N. C | 3s. | 2s. 6d. |
| Hoover Hill, N. C | 3s. | 2s. |
| Kohinoor, Colo | 2s. 6d. | 1s. 6d. |
| Montana Lt., Mont | £7⅛ | £6⅞ |
| New Emma S. Utah | 5s. 6d. | 4s. 6d. |
| New Hoover Hill, N. C. | 3s. | 2s. |
| New La Plata, Colo | 4s | 3s. |
| Plumas Eureka, Cal. | £⅜ | £⅜ |
| Richmond Con., Nev. | £4⅞ | £4⅝ |
| Ruby & Dunderberg, Nev | 5s. | 4s. |
| Russell Gold, N. C. | 3s. 6d. | 3s. |
| Sierra Buttes, Cal. | £1⅛ | £⅞ |
| Union Gold, Colo. | 15s. | 10s. |
| Viola Lt., Idaho | £1 7-16 | £1 5-16 |

Highest and lowest prices October 8th.

### Pittsburg. Oct. 20.

[From our Special Correspondent.]

We have this week to report a dull and unsatisfactory market. As a general thing buyers have decided to hold off for the present, or confine their purchases to limited amounts merely sufficient for current wants. There is a feeling of uncertainty about money affairs and in some degree the feeling has been reflected in the iron trade. There seems to be plenty of business on hand, while every department of trade appears to be in active operation. The principal want at present and for the future is confidence.

*Pig-Iron.*—Prices of certain descriptions are weak and lower, buyers asking concessions that in most cases are refused by sellers; the result is buyers take a hundred instead of a thousand tons. At the same time there are certain makes of iron that holders refuse to make sales below prices that ruled last week, hence the volume of trade will be found restricted. Some seem to think that present inactivity is nothing but the result of previous active buying and a disposition to wait and see how things will go. City furnaces are not offering at present; they are now engaged in filling contracts that were made some time since. Until that is accomplished they will be found very conservative. There is no denying the fact that there is

## DIVIDEND-PAYING MINES.

| | NAME AND LOCATION OF COMPANY. | CAPITAL STOCK. | SHARES. No. | SHARES. Par | ASSESSMENTS. Total levied. | ASSESSMENTS. Date and amount of last. | | | DIVIDENDS. Total paid. | DIVIDENDS. Date and amount of last. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Adams, s. l. | Colo. | $1,500,000 | 150,000 | $10 | * | ..... | ..... | $555,000 | Jan | 1887 | 10 |
| 2 | Alice, s. G. | Mont | 10,000,000 | 400,000 | 25 | * | ..... | ..... | 750,000 | Sept | 1886 | .06⅔ |
| 3 | Alturas, G | Idah. | 1,500 000 | 3 00,000 | 5 | ..... | ..... | ..... | 93,000 | Sept | 1886 | .50 |
| 4 | Amie Con., S. L. | Colo. | 5,000,000 | 500,000 | 10 | * | ..... | ..... | 330,000 | Oct. | 1883 | .05 |
| 5 | Amy & Silversmith, S. | Mon. | ..... | 941,419 | ..... | ..... | ..... | ..... | 247,530 | Aug | 1887 | .12½ |
| 6 | Atlantic, G | Mich | 1,000,000 | 40,000 | 25 | $240,000 | Apl. | 1875 | $1.00 | 360,000 | Jan. | 1887 | $1.00 |
| 7 | Argenta, S | Nev. | 10,000,000 | 100,000 | 100 | 295,000 | July | 1885 | .10 | 40,000 | Feb. | 1890 | 20 |
| 8 | Aurora, L | Mich. | 1 000,000 | 40,000 | 25 | ..... | ..... | ..... | ..... | 155,000 | Oct | 1887 | 1.87½ |
| 9 | Bassick, G. S. | Colo. | 10,000,000 | 100,000 | 100 | * | ..... | ..... | ..... | 400,000 | Mar. | 1884 | 1.00 |
| 10 | Belle Isle, S. | Nev. | 10,000,000 | 100,000 | 100 | 160,000 | Feb | 1887 | .20 | 300,000 | Dec. | 1879 | .25 |
| 11 | Belcher, G. S. | Nev. | 10,400,000 | 104,000 | 100 | 2,289,325 | Sept | 1887 | .50 | 15,397,000 | Apl. | 1876 | 1.00 |
| 12 | Bellevue Idaho, S. L. | Idah. | 1,250,000 | 125,000 | 10 | 46,250 | Dec. | 1883 | 10 | 200,000 | Jan | 1887 | .10 |
| 13 | Big B'nd Hydraulic, G | Dak. | 1,000,000 | 200,000 | 5 | * | ..... | ..... | ..... | 258,000 | Aug | 1887 | .03 |
| 14 | Black Bear, G | Cal. | 3,000,000 | 30,000 | 100 | 22,500 | Dec. | 1884 | .25 | 895,000 | May | 1883 | .20 |
| 15 | Bodie Con., G. S. | Cal. | 10,000,000 | 100,000 | 100 | 424,990 | Aug | 1887 | .50 | 1,602,572 | Apl. | 1885 | .50 |
| 16 | Bonanza Developm't | C&M | 3,000,000 | 300,000 | 10 | ..... | ..... | ..... | ..... | 135,000 | Oct. | 1882 | .15 |
| 17 | Bonanza K'g, Cons. S. | Cal. | 1,000,000 | 100,000 | 10 | * | ..... | ..... | ..... | 185,000 | Feb. | 1885 | .10 |
| 18 | Boston & Mont, G | Mont | 2,500,000 | 250,000 | 10 | * | ..... | ..... | ..... | 520,000 | Jun | 1886 | .15 |
| 19 | Breece, S | Colo. | 5,000,000 | 200,000 | 25 | * | ..... | ..... | ..... | 2,000 | Feb. | 1880 | .01 |
| 20 | Brooklyn Lead, L. S | Utah | 500,000 | 50,000 | 10 | ..... | ..... | ..... | ..... | 127,000 | July | 1887 | .05 |
| 21 | Bulwer, G | Cal | 10,000,000 | 100,000 | 10 | 60,000 | July | 1887 | .20 | 175,006 | Jan. | 1884 | .10 |
| 22 | Caledonia, G | Dak. | 10,000,000 | 100,000 | 100 | 595,000 | May | 1885 | .15 | 40,000 | Feb. | 1886 | .10 |
| 23 | Calumet & Hecla, C | Mich | 2,500,000 | 100,000 | 25 | 1,300,000 | .. | ..... | ..... | 29,350,000 | July | 1887 | 5.00 |
| 24 | Carbonate Hill, S. L. | Colo. | 2,000,000 | 200,000 | 10 | * | ..... | ..... | ..... | 80,000 | Apl. | 1884 | .05 |
| 25 | Caribou Con., S | Colo. | 1,500,000 | 150,000 | 10 | * | ..... | ..... | ..... | 50,000 | Mch | 1880 | .10 |
| 26 | Castle Creek, G | Idah. | 100,000 | 100,000 | 1 | ..... | ..... | ..... | ..... | 51,000 | Oct. | 1883 | .03 |
| 27 | Catalpa, S. L | Colo. | 3,000,000 | 300,000 | 10 | * | ..... | ..... | ..... | 270,000 | May. | 1884 | .10 |
| 28 | Central, C | Mich | 500,000 | 20,000 | 25 | 100,000 | Sept | 1861 | .05 | 1,830,000 | Feb. | 1887 | 2.00 |
| 29 | Christy, S | Utah | 10,000,000 | 100,000 | 100 | ..... | ..... | ..... | ..... | 10,000 | Jun. | 1885 | .10 |
| 30 | Chrysolite, S. L | Colo. | 10,000,000 | 200,000 | 50 | * | ..... | ..... | ..... | 1,600,000 | Dec. | 1884 | .25 |
| 31 | Colorado Central, S. L | Colo. | 2,750,000 | 275,000 | 10 | * | ..... | ..... | ..... | 227,625 | Oct. | 1887 | .05 |
| 32 | Cons. Cal. & Va., G. S. | Nev. | 21,600,000 | 216,000 | 100 | 108,000 | Jan | 1885 | .20 | 1,144,000 | Oct. | 1887 | .50 |
| 33 | Con. Gold Mining, G | Ga. | 500,000 | 100,000 | 5 | * | ..... | ..... | ..... | 108,000 | Nov. | 1883 | .02 |
| 34 | Contention, S | Ariz. | 12,500,000 | 250,000 | 50 | ..... | ..... | ..... | ..... | 92,587,000 | Dec. | 1884 | .25 |
| 35 | Crescent, S. L. G | Utah | 15,000,000 | 600,000 | 25 | 1 | ..... | ..... | ..... | 210,000 | Aug. | 1886 | .05 |
| 36 | Crown Point, G. S. | Nev. | 10,000,000 | 100,000 | 100 | 2,675,000 | Feb. | 1882 | .25 | 11,588,000 | Jan. | 1875 | 2.00 |
| 37 | Daly, S. L. | Utah | 3,000,000 | 150,000 | 20 | ..... | ..... | ..... | ..... | 300,000 | Sept | 1887 | .50 |
| 38 | Deadwood-Terra, G. | Dak. | 5,000,000 | 200,000 | 25 | * | ..... | ..... | ..... | 498,000 | Oct. | 1887 | .10 |
| 39 | Derbec H. Grav., G. S. | Cal. | 10,000,000 | 100,000 | 100 | 90,000 | Dec. | 1881 | .10 | 180,000 | May | 1887 | .10 |
| 40 | Dunkin, S. L. | Colo. | 5,000,000 | 200 000 | 25 | * | ..... | ..... | ..... | 250,000 | Oct | 1887 | .10 |
| 41 | Elkhorn, G. S. | Mont | 1,000,000 | 100,000 | 10 | 50,000 | July | 1883 | .50 | 180,000 | July | 1887 | .05 |
| 42 | Empire Lt., G | Mont | 500,000 | 100,000 | 5 | ..... | ..... | ..... | ..... | 33,000 | Mar | 1887 | .05 |
| 43 | Eureka Con., G. S. L. | Nev. | 5,000,000 | 50,000 | 100 | 500,000 | July | 1886 | 1.00 | 4,855,500 | Nov. | 1887 | .25 |
| 44 | Evening Star, S. L. | Colo. | 500,000 | 30,000 | 10 | * | ..... | ..... | ..... | 1,400,000 | Nov | 1883 | .50 |
| 45 | Excelsior, G | Cal. | 10,000,000 | 100,000 | 100 | 560,000 | Sept | 1885 | 1.00 | 875,000 | Oct. | 1880 | .25 |
| 46 | Father de Smet, G. | Dak. | 10,000,000 | 100 000 | 100 | 200,000 | Nov | 1878 | 1.00 | 1,125,000 | Dec. | 1885 | .20 |
| 47 | Franklin, C | Mich | 1,000,000 | 40,000 | 25 | 220,000 | Jun | 1871 | ..... | 560,000 | Dec. | 1886 | 1.00 |
| 48 | Freeland, G. S. C. | Colo. | 5,000,000 | 200,000 | 25 | * | ..... | ..... | ..... | 190,000 | July | 1886 | .10 |
| 49 | Fresno Enterprise, G | Cal. | 5,000,000 | 100,000 | 50 | ..... | ..... | ..... | ..... | 110,000 | July | 1882 | .10 |
| 50 | Garfield Lt., G. S | Nev. | 500,000 | 100,000 | 5 | ..... | ..... | Mch | 1883 | 25,000 | Mar. | 1885 | .12½ |
| 51 | Gould & Curry, G. S. | Nev. | 10,800,000 | 108,000 | 100 | 1,159,400 | Jun. | 1887 | .50 | 3,820,000 | Oct. | 1870 | 10.00 |
| 52 | Grand Central, S | Ariz. | 1,000,000 | 100,000 | 10 | ..... | ..... | ..... | ..... | 625,000 | Dec. | 1882 | .25 |
| 53 | Grand Prize, S | Nev. | 10,000,000 | 100,000 | 100 | 570,000 | Apl. | 1886 | .50 | 495,000 | Mar. | 1884 | .25 |
| 54 | Granite, S | Colo. | 125,000 | 125,000 | 1 | ..... | ..... | ..... | ..... | 6,250 | May | 1883 | .01 |
| 55 | Granite Mountain, S. | Mont | 10,000,000 | 400,000 | 25 | ..... | ..... | ..... | ..... | 3,200,000 | Oct. | 1887 | .50 |
| 56 | Green Mountain, G | Cal. | 1,250,000 | 125,000 | 10 | * | ..... | ..... | ..... | 212,000 | Nov. | 1881 | .07½ |
| 57 | Hale & Norcross, G. S | Nev. | 11,200,000 | 112,000 | 100 | 5,086,800 | July | 1887 | .50 | 1,598,000 | Apl | 1871 | 5.00 |
| 58 | Hall-Anderson, G | N. S. | 150,000 | 150,000 | 1 | ..... | ..... | ..... | ..... | 7,000 | Jan. | 1882 | .05 |
| 59 | Hecla Con., S. G. L. C. | Mont | 1,500,000 | 30,000 | 50 | ..... | ..... | ..... | ..... | 1,047,000 | Aug | 1886 | .50 |
| 60 | Hel'a Mg & Red, G. S. L. | Mont | 3,315,000 | 663,000 | 5 | * | ..... | ..... | ..... | 197,973 | July | 1886 | .06 |
| 61 | Holmes, S | Nev. | 10,000,000 | 100,000 | 100 | 300,000 | Sept | 1885 | 10 | 75,000 | Apl. | 1886 | .25 |
| 62 | Holyoke, G | Idah. | 200,000 | 200,000 | 1 | ..... | ..... | ..... | ..... | 27 000 | Feb. | 1883 | .10 |
| 63 | Homestake, G | Dak. | 12,500,000 | 125,000 | 100 | 200,000 | July | 1878 | 1.00 | 3,943,750 | Oct. | 1887 | .20 |
| 64 | Honorine, S. L | Utah | 500,000 | 250,000 | 2 | 25,000 | Jun. | 1883 | ..... | 125,000 | Sept | 1887 | .05 |
| 65 | Hope, S | Mont | 1,000,000 | 100,000 | 10 | * | ..... | ..... | ..... | 183,252 | Oct. | 1887 | .25 |
| 66 | Horn Silver, S. L | Utah | 10,000,000 | 400,000 | 25 | * | ..... | ..... | ..... | 4,000,000 | Nov. | 1884 | .50 |
| 67 | Idaho, G | Cal. | 310,000 | 3,100 | 100 | ..... | ..... | ..... | ..... | 4,539,500 | Apl. | 1887 | 5.00 |
| 68 | Ideal, S. L | Colo. | 1,500,000 | 50,000 | 10 | ..... | ..... | ..... | ..... | 15,000 | Oct. | 1886 | .05 |
| 69 | Illinois, S | N. M. | 100,000 | 100,000 | 1 | * | ..... | ..... | ..... | 25,000 | Jan | 1887 | .25 |
| 70 | Independence, S | Nev. | 10,000,000 | 100,000 | 100 | 340,000 | Oct. | 1886 | .20 | 225,000 | Sept | 1879 | .25 |
| 71 | Indian Queen, S | Nev. | 250,000 | 125,000 | 2 | ..... | ..... | ..... | ..... | 368,750 | July | 1883 | .03 |
| 72 | Inyo, G | Cal. | 500,000 | 100,000 | 5 | * | ..... | ..... | ..... | 45,000 | Apl. | 1882 | .05 |
| 73 | Iron Hill, S | Dak. | 2,500,000 | 250,000 | 10 | 82,500 | Oct. | 1885 | ..... | 137,500 | Oct. | 1887 | .05 |
| 74 | Iron-Silver, S. L | Colo. | 10,000,000 | 500,000 | 20 | * | ..... | ..... | ..... | 2,100,000 | Oct. | 1887 | .20 |
| 75 | Jackson, G. S | Nev. | 5,000,000 | 50,000 | 100 | 10,000 | Nov | 1880 | .20 | 45,000 | Oct. | 1881 | .10 |
| 76 | Jocuistitla, S | Mex. | 2,500,000 | 250,000 | 10 | ..... | .. | ..... | ..... | 1,200,000 | Feb. | 1885 | .50 |
| 77 | Jumbo, G | Colo. | 2,000,000 | 200,000 | 10 | ..... | ..... | ..... | ..... | 15,000 | Jun. | 1887 | .02½ |
| 78 | Kentuck | Nev. | 3,000,000 | 30,000 | 100 | 342,000 | Nov | 1881 | .30 | 1,600,000 | Dec. | 1886 | .10 |
| 79 | La Plata, S. L | Colo. | 2,000,000 | 200,000 | 10 | * | ..... | ..... | ..... | 610,000 | Sept | 1882 | .30 |
| 80 | Leadville Cons., S. L. | Colo. | 4,000,000 | 400,000 | 10 | * | ..... | ..... | ..... | 430,000 | Apl. | 1887 | .05 |
| 81 | Lexington, G. S | Mont | 4,000,000 | 40,000 | 100 | * | ..... | ..... | ..... | 565,000 | Jan. | 1885 | 2.00 |
| 82 | Little Chief, S. L | Colo. | 10,000,000 | 200,000 | 50 | * | ..... | ..... | ..... | 780,000 | Mch | 1885 | .10 |
| 83 | Little Pittsburg, S. L | Colo. | 20,000,000 | 200,000 | 100 | * | ..... | ..... | ..... | 1,050,000 | Mch. | 1880 | 50 |
| 84 | Manhattan, S | Nev | 5,000,000 | 50,000 | 100 | 300,000 | Jun | 1887 | 1.00 | 437,500 | Feb | 1886 | .25 |
| 85 | Marguerite, G | Cal. | 500,000 | 25,000 | 20 | ..... | ..... | ..... | ..... | 18,750 | Oct. | 1882 | .25 |
| 86 | Marion Bullion, G | N. C. | 500,000 | ..... | ..... | ..... | ..... | ..... | ..... | 15,000 | Jan. | 1886 | ..... |
| 87 | Martin White, S | Nev. | 10,000,000 | 100,000 | 100 | 1,150,000 | Mar. | 1886 | 25 | 140,000 | Dec. | 1886 | .25 |
| 88 | Mary Murphy, G. S | Colo. | 350,000 | 3,500 | 100 | * | ..... | ..... | ..... | 87,500 | Sept | 1887 | 5.00 |
| 89 | Minnesota, C | Mich | 1,000,000 | 40,000 | 25 | 420,000 | Apl. | 1886 | 1 00 | 1,826,000 | Mar. | 1876 | ..... |
| 90 | Mono, G | Colo. | 5,000,000 | 50,000 | 100 | 610,000 | Sept | 1887 | .50 | 12,500 | Mar. | 1887 | .25 |
| 91 | Montana, Lt., G. S. | Mont | 3,300,000 | 330,000 | 10 | * | ..... | ..... | ..... | 1,247,400 | July | 1887 | .75 |
| 92 | Morning Star, S. L. | Colo. | 1,000,000 | 100,000 | 10 | ..... | ..... | ..... | ..... | 725,000 | July | 1887 | .25 |
| 93 | Moulton, S. G | Mont | 2,000,000 | 400,000 | 5 | * | ..... | ..... | ..... | 350,000 | May | 1887 | .07½ |
| 94 | Mount Pleasant, G | Cal. | 150,000 | 150,000 | 1 | * | ..... | ..... | ..... | 150,000 | Feb. | 1887 | .30 |
| 95 | Mt. Diablo, S | Nev. | 5,000,000 | 50,000 | 100 | 137,500 | Jun. | 1880 | 2.00 | 80,000 | July | 1886 | .20 |
| 96 | Napa, Q | Cal. | 700,000 | 100,000 | 7 | ..... | ..... | ..... | ..... | 290,000 | Jan. | 1883 | .10 |
| 97 | Navajo, G. S | Nev. | 10,000,000 | 100,000 | 100 | 45,000 | Mar. | 1887 | 30 | 325,000 | Feb. | 1886 | .25 |
| 98 | N. Hoover Hill, G. S. | N. C. | 300,000 | 120,000 | 2½ | * | ..... | ..... | ..... | 30,000 | Dec. | 1885 | .06⅔ |
| 99 | New York Hill, G | Cal. | 5,000,000 | 50,000 | 100 | 62,500 | Oct | 1885 | .15 | 215,000 | Aug. | 1882 | .10 |
| 100 | Northern Belle, S | Nev. | 5,0 0,000 | 50,000 | 100 | 425,000 | Jan. | 1884 | 8.30 | 2,400,000 | Apl. | 1883 | .50 |
| 101 | North Belle Isle, S | Nev. | 10,000,000 | 100,000 | 100 | 250,000 | Mar | 1887 | .50 | 30,000 | Apl. | 1881 | .15 |
| 102 | Ontario, S. L | Utah | 15,000,000 | 150,000 | 100 | ..... | ..... | ..... | ..... | 8,675,000 | Oct. | 1887 | .50 |
| 103 | Ophir, G. S | Nev. | 10,000,000 | 100,000 | 100 | 4,057,800 | Aug | 1887 | .50 | 1,595,000 | July | 1882 | 1.00 |
| 104 | Original, S. C | Mont | 1,500,000 | 60,000 | 25 | * | ..... | ..... | ..... | 120,000 | Oct. | 1887 | .05 |
| 105 | Osceola, G | Mich | 1,250,000 | 50,000 | 25 | 480,000 | Apl. | 1876 | 1.60 | 1,022,500 | Jan. | 1887 | 1 00 |
| 106 | Oxford, G | N. S. | 125,000 | 125,000 | 1 | * | ..... | ..... | ..... | 34,500 | Oct. | 1885 | .02 |
| 107 | Paradise Valley, G. S | Nev. | 10,000,000 | 100,000 | 100 | 47,000 | Mar. | 1882 | .15 | 150,000 | Apl | 1887 | .10 |
| 108 | Parrott, C | Mont | 1,800,000 | 180,000 | 10 | ..... | ..... | ..... | ..... | 36,000 | July | 1887 | .10 |
| 109 | Peacock, S. G. C. | N. M. | 2,000,000 | 200,000 | 10 | * | ..... | ..... | ..... | 60,000 | Nov. | 1886 | ..... |
| 110 | Pleasant Valley, G. S. | Cal. | 10,000,000 | 100,000 | 100 | 10,000 | Mar. | 1884 | .10 | 30,000 | Dec. | 1882 | .05 |
| 111 | Plutus, G. S. C. L | Colo. | 2,000,000 | 200,000 | 10 | * | ..... | ..... | ..... | 30,000 | Feb. | 1886 | .10 |
| 112 | Plymouth Con., G | Cal. | 5,000,000 | 100,000 | 50 | * | ..... | ..... | ..... | 2,160,000 | Nov. | 1887 | .40 |
| 113 | Prussian, S. L | Colo. | 1,500,000 | 150,000 | 10 | ..... | ..... | ..... | ..... | 132,000 | Jan. | 1883 | .10 |
| 114 | Quicksilver, pref., Q | Cal. | 4,300,000 | 43,000 | 100 | ..... | ..... | ..... | ..... | 914,150 | Aug. | 1887 | 1.50 |
| 115 | " com., Q | Cal. | 5,700,000 | 57,000 | 100 | ..... | ..... | ..... | ..... | 151,000 | July | 1882 | .40 |
| 116 | Quincy, C | Mich | 1,000,000 | 40,000 | 25 | 200,000 | Dec. | 1863 | ..... | 4,610,000 | Aug. | 1887 | 1.00 |
| 117 | Richmond, S. L | Nev. | 1,350,000 | 54,000 | 25 | * | ..... | ..... | ..... | 4,312,587 | Jun. | 1887 | 1. 25 |
| 118 | Ridge, C | Mich. | 500,000 | 20,000 | 25 | 220,000 | Mar | 1886 | .50 | 100,000 | Feb. | 1880 | .50 |
| 119 | Rising Sun, S | Dak. | 750,000 | 150,000 | 5 | * | ..... | ..... | ..... | 52,000 | May | 1881 | .07½ |
| 120 | Robinson Con., S. L. | Colo. | 10,000,000 | 200,000 | 50 | * | ..... | ..... | ..... | 585,000 | Mar. | 1886 | .05 |
| 121 | Robert E. Lee, S. L | Colo | 10,000,000 | 500,000 | 20 | * | ..... | ..... | ..... | 100,000 | Dec. | 1882 | .50 |
| 122 | Rooks, G | Vt. | 500,000 | 50,000 | 10 | ..... | ..... | ..... | ..... | 61,000 | Apr | 1885 | .40 |
| 123 | Savage, S | Nev. | 11,200,000 | 112,000 | 100 | 6,324,000 | Sept | 1887 | 50 | 4,480,000 | July | 1869 | 3.00 |
| 124 | Security L. Mg., Mfg. | Colo. | 1,000,000 | 100,000 | 10 | * | ..... | ..... | ..... | 50,000 | July | 1884 | ..... |
| 125 | Shoshone, G | Idah. | 150,000 | 150,000 | 1 | ..... | ..... | ..... | ..... | 7,500 | Apl. | 1883 | .01 |
| 126 | Sierra Buttes, G | Cal. | 225,000 | 22,500 | 10 | ..... | ..... | ..... | ..... | 1,438,964 | Oct. | 1886 | .37 |
| 127 | Sierra Grande, S | N. M. | 2,500,000 | 500,000 | 5 | * | ..... | ..... | ..... | 860,000 | Sept | 1884 | .25 |
| 128 | Sierra Nevada, G. S. | Nev. | 10,000,000 | 100,000 | 100 | 6,262,000 | Aug. | 1887 | .25 | 102,000 | Jan. | 1871 | 1.00 |
| 129 | Silver Cord, G. S. L. | Colo. | 5,000,000 | 500,000 | 10 | ..... | ..... | ..... | ..... | 925,000 | Nov. | 1883 | .25 |
| 130 | Silver King, S | Ariz. | 10,000,000 | 100,000 | 100 | ..... | ..... | ..... | ..... | 2,000,000 | July | 1887 | .25 |
| 131 | Silverton, G. S. L | Colo. | 2,000,000 | 200,000 | 10 | * | ..... | ..... | ..... | 76,000 | Nov. | 1886 | .02 |
| 132 | Small Hopes Cons., S. | Colo. | 5,000,000 | 250,000 | 20 | * | ..... | ..... | ..... | 2,962,500 | Sept | 1887 | .20 |
| 133 | Smuggler, S. L | Colo. | 600,000 | 60,000 | 10 | ..... | ..... | ..... | ..... | 66,700 | Aug. | 1883 | .25 |
| 134 | Socorro, C | N. M. | 250,000 | 5,000 | 100 | ..... | ..... | ..... | ..... | 4,000 | Mch | 1882 | .00¾ |
| 135 | South Yuba, G | Cal. | 2,000,000 | 0.000 | 50 | * | ..... | ..... | ..... | 150,000 | Oct. | 1881 | .75 |
| 136 | Spring Valley, G | Cal. | 200,000 | 200,000 | 1 | 50,000 | Oct. | 1886 | .25 | 50,000 | Jan. | 1881 | .25 |
| 137 | Standard, G. S | Cal. | 10 000,000 | 100,000 | 100 | 25,000 | Oct. | 1884 | .25 | 4,425,000 | Mar. | 1884 | .25 |
| 138 | Stormont, S | Utah | 500,000 | 500,000 | 1 | * | ..... | ..... | ..... | 155,000 | Nov. | 1881 | .05 |
| 139 | St. Joseph, L | Mo. | 1,500,000 | 150,000 | 10 | * | ..... | ..... | ..... | 314,000 | Sept | 1887 | .20 |
| 140 | Suriuam, G | D. G. | 3,000,000 | 6 00,000 | 5 | ..... | ..... | ..... | ..... | 75,000 | Oct. | 1887 | .15 |
| 141 | Syndicate, G | Cal. | 10,000,000 | 100,000 | 100 | 38,729 | July | 1882 | .15 | 48,308 | Sept | 1885 | .10 |
| 142 | Tip Top, S | Ariz. | 10,000,000 | 100,000 | 100 | 250,000 | Sept | 1883 | .25 | 100,000 | Nov. | 1881 | .20 |
| 143 | Tombstone, G. S. L. | Ariz. | 12,500,000 | 500,000 | 25 | * | ..... | ..... | ..... | 1,250,000 | Apl. | 1882 | .10 |
| 144 | United Verde, C | Ariz. | 3,000,000 | 300,000 | 10 | * | ..... | ..... | ..... | 97,500 | Feb. | 1884 | .20 |
| 145 | Valencia, M | N. H. | 150,000 | 1,500 | 100 | * | ..... | ..... | ..... | 37,500 | Apl | 1886 | 2.50 |
| 146 | Viola Lt., S. L | Idah. | 750,000 | 150,000 | 5 | * | ..... | ..... | ..... | 74,500 | May | 1887 | .12½ |
| 147 | Vizina, S | Ariz. | 5,000,000 | 200,000 | 25 | * | ..... | ..... | ..... | 140,000 | Apl. | 1882 | .10 |
| 148 | Yankee Girl | Colo. | 2,500,000 | 250,000 | 10 | ..... | ..... | ..... | ..... | 1,087,500 | July | 1887 | .10 |
| 149 | Yellow Jacket, G. S. | ..... | 12,000,000 | 120,000 | 100 | 5,418,000 | Dec | 1885 | .75 | 2,184,000 | Aug. | 1871 | 1.50 |

## NON-DIVIDEND-PAYING MINES.

| | NAME AND LOCATION OF COMPANY. | CAPITAL STOCK. | SHARES. No. | SHARES. Par Value. | ASSESSMENTS. Total levied. | ASSESSMENTS. Date & am'nt. of last. | | |
|---|---|---|---|---|---|---|---|---|
| 1 | Agassiz Cons., S. L. | Colo. | $2,500,000 | 50,000 | $50 | * | ..... | ..... |
| 2 | Albion, S. L. | Nev. | 15,000,000 | 150,000 | 100 | $577,000 | July | 1883 .25 |
| 3 | Allouez, C | Mich | 2,000,000 | 80,000 | 25 | 240,000 | Feb | 1884 ..... |
| 4 | Alpha Con., G. S. | Nev. | 3,000,000 | 30,000 | 100 | 460,000 | Aug. | 1887 .50 |
| 5 | Alta, S | Nev. | 10,080,000 | 100,800 | 100 | 2,027,000 | Feb | 1887 .50 |
| 6 | Amador, G | Cal. | 400,000 | 200,000 | 2 | * | ..... | ..... |
| 7 | American Flag, S | Colo. | 1,250,000 | 125,000 | 10 | 300,000 | Jun | 1877 .50 |
| 8 | Anglo-Montana, Lt. | Mon. | 600,000 | 120,000 | 5 | ..... | ..... | ..... |
| 9 | Appalachian, Lt., G. | N. C. | 1,500,000 | 300,000 | 5 | ..... | ..... | ..... |
| 10 | Aspen Mg. & S., S. L. | Colo. | 2,000,000 | 200,000 | 10 | ..... | ..... | ..... |
| 11 | Barcelona, G | Nev. | 5,000,000 | 200,000 | 25 | * | ..... | ..... |
| 12 | Bechtel Con., G | Cal. | 10,000,000 | 100,000 | 100 | 173,500 | Jan. | 1883 .10 |
| 13 | Belmont, S | Nev. | 5,000,000 | 50,000 | 100 | 735,000 | Apl. | 1886 .10 |
| 14 | Best & Belcher, G. S. | Nev. | 10,080,000 | 100,800 | 100 | 1,900,500 | Aug. | 1887 .50 |
| 15 | Big Pittsburg, S. L. | Colo. | 20,000,000 | 200,000 | 100 | * | ..... | ..... |
| 16 | Bi-Metallic, S | Mon. | 5,000,000 | 200,000 | 25 | * | ..... | ..... |
| 17 | Black Jack, G | Cal. | 250,000 | 100,000 | 2½ | ..... | ..... | ..... |
| 18 | Boston Con., G | Cal. | 10,000,000 | 100,000 | 100 | 170,000 | Nov | 1883 .25 |
| 19 | Bradshaw, S | Ariz. | 2,250,000 | 225,000 | 10 | ..... | ..... | ..... |
| 20 | Brunswick, G | Cal. | 2,000 000 | 400,000 | 5 | * | ..... | ..... |
| 21 | Bullion, G. S. | Nev. | 10,000,000 | 100,000 | 100 | 5,050,000 | Aug. | 1887 .50 |
| 22 | Bye and Bye | Ariz. | 1,000,000 | 100,000 | 10 | * | ..... | ..... |
| 23 | Calaveras, G | Cal. | 500,000 | 500,000 | 1 | * | ..... | ..... |
| 24 | Carisa, G | Wy. | 500,000 | 100,000 | 5 | * | ..... | ..... |
| 25 | Cashier, G. S | Colo. | 500,000 | 250,000 | 2 | * | ..... | ..... |
| 26 | Cen Contin'l, G. S. L. | C. & A | 2,000,000 | 200,000 | 10 | * | ..... | ..... |
| 27 | Charles Dickens, G. S. | Idah. | 1,250,000 | 250,000 | 5 | * | ..... | ..... |
| 28 | Cherokee, G | Cal. | 1,500,000 | 150,000 | 10 | ..... | ..... | ..... |
| 29 | Chollar, S | Nev. | 11,250,000 | 112,000 | 100 | 1,152,000 | Aug. | 1887 .50 |
| 30 | Cinnamon Mt., G. S | Colo. | 750,000 | 150,000 | 5 | ..... | ..... | ..... |
| 31 | Climax, S. L. | Colo. | 2,000,000 | 200,000 | 10 | * | ..... | ..... |
| 32 | Colorado No. 2, S. L. | Colo. | 100,000 | 10,000 | 10 | * | ..... | ..... |
| 33 | Comstock, G. S | Nev. | 10,000,000 | 100,000 | 100 | 30,000 | Mar. | 1887 .15 |
| 34 | Con. Imperial, G. S. | Nev. | 5,000,000 | 50,000 | 100 | 1,175,000 | Sept | 1887 .25 |
| 35 | Con. Pacific, G | Cal. | 6,000 000 | 60,000 | 100 | 183,000 | Sept | 1887 15 |
| 36 | Cons Silver, S | Mo. | 2,500,000 | 250,000 | 10 | ..... | ..... | ..... |
| 37 | **Cop. Queen Cons, C. | Ariz | 1,400 000 | 140,000 | 10 | ..... | ..... | ..... |
| 38 | Courtlandt | Colo. | 500,000 | 50,000 | 10 | * | ..... | ..... |
| 39 | Crescent, S. L. | Colo. | 3,000,000 | 300,000 | 10 | * | ..... | ..... |
| 40 | Crocker, S | Ariz. | 10,000,000 | 100,000 | 100 | 75,000 | May | 1887 .10 |
| 41 | Crowell, G | N. C. | 500,000 | 500,000 | 1 | ..... | ..... | ..... |
| 42 | Dahlonega, G | Ga. | 250,000 | 250,000 | 1 | * | ..... | ..... |
| 43 | Dandy, S | Colo. | 5,000,000 | 500,000 | 10 | ..... | ..... | ..... |
| 44 | Dardanelles, G | Cal. | 1,000,000 | 100,000 | 10 | ..... | ..... | ..... |
| 45 | Decatur, S | Colo. | 1,500,000 | 300,000 | 5 | * | ..... | ..... |
| 46 | Denver City, S. L. | Colo. | 5,000,000 | 500,000 | 10 | * | ..... | ..... |
| 47 | Denver Gold | Colo. | 300,000 | 60,000 | 5 | ..... | ..... | ..... |
| 48 | Deseret, G. S | Utah | 500,000 | 50,000 | 10 | * | ..... | ..... |
| 49 | Dunderberg, S | Colo. | 1,500,000 | 150,000 | 10 | * | ..... | ..... |
| 50 | Durango, G | Colo. | 500,000 | 500,000 | 1 | * | ..... | ..... |
| 51 | Eastern Dev. Co., Lt. | N. S. | 1,500,000 | 150 000 | 10 | 900,000 | Mar. | 1886 1.00 |
| 52 | El Cristo, G. S | U.S.C | 1,000,000 | 500,000 | 2 | ..... | ..... | ..... |
| 53 | El Dorado, G | Cal. | 1,000,000 | 250,000 | 4 | * | ..... | ..... |
| 54 | El Talento, G | U.S.C | 1,000,000 | 500,000 | 2 | ..... | ..... | ..... |
| 55 | Empire, S | Utah | 10,000,000 | 100,000 | 100 | ..... | ..... | ..... |
| 56 | Enterprise, S. L. | Colo. | 800,000 | 80,000 | 10 | * | ..... | ..... |
| 57 | Eureka Tunnel, S. L. | Nev. | 10,000,000 | 100,000 | 100 | ..... | ..... | ..... |
| 58 | Exchequer | Nev. | 10,000,000 | 100,000 | 100 | 880,000 | July | 1887 .20 |
| 59 | Found Treasure, S | Nev. | 10,500,000 | 100,000 | 100 | ..... | ..... | ..... |
| 60 | Gold Cup, S | Colo. | 500,000 | 500,000 | 1 | * | ..... | ..... |
| 61 | Gold Placer, G | Colo. | 5,000,000 | 200,000 | 25 | 229,314 | Dec. | 1885 .25 |
| 62 | Gold Rock, G | Cal. | 1,000,000 | 500,000 | 2 | * | ..... | ..... |
| 63 | Goodsnaw, G | Cal. | 10,000,000 | 100,000 | 100 | * | ..... | ..... |
| 64 | Grand Belt, C | Tex. | 12,000,000 | 120,000 | 100 | ..... | ..... | ..... |
| 65 | Grand Duke | Colo. | 800,000 | 80,000 | 10 | ..... | ..... | ..... |
| 66 | Great Romance, G | U.S.C | 1,000,000 | 500,000 | 2 | * | ..... | ..... |
| 67 | Gregory-Bobtail, G | Colo. | 550,000 | 550,000 | 1 | * | ..... | ..... |
| 68 | Gregory Con., G | Mon. | 3,000,000 | 300,000 | 10 | ..... | ..... | ..... |
| 69 | Hariem M. & M. Co, G. | Cal. | 1,000,00 | 200,000 | 5 | ..... | ..... | ..... |
| 70 | Head Cent. & Tr. S. G | Ariz. | 10,000,000 | 100,000 | 100 | ..... | ..... | ..... |
| 71 | Hector, G | Cal. | 1,500,000 | 300,000 | 5 | ..... | ..... | ..... |
| 72 | Highland, C | Mich | 500,000 | 25,000 | 25 | ..... | ..... | ..... |
| 73 | Hortense, S | Colo. | 2,000,000 | 200,000 | 10 | ..... | ..... | ..... |
| 74 | Huron, C | Mich | 1,000,000 | 40,000 | 25 | 280,000 | May | 1887 3.00 |
| 75 | Iron Gold & Silver, S | N. M. | 2,000,000 | 200,000 | 10 | ..... | ..... | ..... |
| 76 | Iroquois, C | Mich | 1,250,000 | 50,000 | 25 | ..... | ..... | ..... |
| 77 | J. D. Reymert | Ariz | 10,000,000 | 100,000 | 100 | * | ..... | ..... |
| 78 | Julia Cons., G. S. | Nev. | 11,000,000 | 110,000 | 100 | 1,452,000 | Apl. | 1887 .10 |
| 79 | Kearsarge, C | Mich | 1 250,000 | 50,000 | 25 | 100,000 | Apl. | 1880 5.00 |
| 80 | Laclede | N. M. | 2,000,000 | 200,000 | 10 | ..... | ..... | ..... |
| 81 | Lacrosse, G | Colo. | 1 000,000 | 100,000 | 10 | * | ..... | ..... |
| 82 | Lee Basin, S. L. | Colo. | 5,000,000 | 500,000 | 10 | * | ..... | ..... |
| 83 | Lucerne, S | Colo. | 5,000,000 | 500,000 | 10 | * | Jan. | 1886 .10 |
| 84 | Mammoth Bar., G | Cal. | 10,000,000 | 100,000 | 100 | 50,000 | Dec. | 1881 ..... |
| 85 | Mariposa pref., G | Cal. | 5,000,000 | 50,000 | 100 | 1,687,500 | Feb. | 1883 .25 |
| 86 | " common, G | Cal. | 10,000,000 | 100,000 | 100 | 1,975,000 | Dec. | 1881 .20 |
| 87 | May Belle, G | Cal. | 10,000,000 | 100,000 | 100 | 84,000 | Mar. | 1884 .15 |
| 88 |

# NEW YORK MINING STOCK QUOTATIONS.

## DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | Oct. 15. | | Oct. 17. | | Oct. 18. | | Oct. 19. | | Oct. 20. | | Oct. 21. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| Alice, Mon | ... | ..... | ..... | ... | .85 | ... | ..... | ..... | ... | ..... | ... | ..... | 100 |
| Argenta, Nev | ..... | ..... | ..... | ..... | .30 | .25 | ..... | ..... | ..... | ..... | ..... | ..... | 200 |
| Bassick, Colo | ..... | ..... | ..... | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Belcher, Nev | ..... | ..... | ..... | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Belle Isle, Nev | .78 | ..... | .80 | .... | 1.00 | .... | .... | ..... | 1.00 | ..... | .... | ..... | 800 |
| Bodie Cons., Cal | 1.95 | 1 90 | 2.50 | ..... | 2.50 | .... | 2 30 | .... | 1.95 | .... | 2.20 | ..... | 1,100 |
| Breece, Colo | .... | ..... | .53 | ..... | .55 | .... | .... | ..... | ..... | ..... | .... | ..... | ..... |
| Bulwer, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Caledonia, Dak | .... | ..... | ..... | ..... | ..... | .... | 1 50 | ..... | 1.55 | .... | 1.50 | .... | 950 |
| Chollar, Nev | .... | ..... | .... | .... | .... | .... | .... | .... | 5.50 | 5.35 | 5.50 | .... | 225 |
| Chrysolite, Colo | .... | ..... | .... | ... | .... | .... | .... | .... | .... | .... | .38 | ... | 100 |
| Colorado Cent'l, Colo | .... | ..... | .... | ... | .... | .... | .... | .... | .... | .... | .... | .... | .... |
| Cons. Cal. & Va., Nev | 16.13 | ..... | 16.88 | ..... | 17.88 | .... | 18.13 | ..... | 18.00 | ..... | ..... | ..... | 700 |
| Crown Point, Nev | .... | ..... | .... | .... | .... | .... | 12.88 | ..... | ..... | .... | ..... | ..... | 100 |
| Deadwood, Dak | .... | ..... | 3.00 | .... | .... | .... | ..... | ..... | ..... | ..... | ..... | ..... | 500 |
| Dunkin, Colo | .... | ... | .95 | ..... | 1.00 | .... | ..... | ..... | ..... | ..... | ..... | ..... | 1,000 |
| Eureka Cons., Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Father de Smet, Dak | .... | ..... | .... | .... | .... | .... | .... | ..... | .... | .... | .... | .... | ..... |
| Freeland, Colo | .... | ..... | .... | ... | .... | .... | .... | ..... | .... | .... | .... | .... | ..... |
| Gold Stripe, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Gould & Curry, Nev | 5.13 | ..... | ..... | ..... | ..... | ..... | 5 25 | ..... | ..... | ..... | ..... | ..... | 200 |
| Green Mountain, Cal | ..... | ..... | .08 | ..... | ..... | ..... | ..... | ..... | .07 | .... | ..... | ..... | 600 |
| Hale & Norcross, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4.00 | ... | .... | ..... | 200 |
| Helena, Mont | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Holyoke, Idaho | .09 | .... | .09 | ..... | .10 | .09 | .09 | .... | .09 | .... | .09 | .... | 3,300 |
| Homestake, Dak | .... | ..... | ..... | ..... | 14.00 | .... | 13.50 | 12.00 | 15.00 | 13.00 | .... | .... | 300 |
| Horn-Silver, Ut | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .90 | .... | 100 |
| Independence, Nev | ... | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Iron Hill, Dak | ..... | ..... | ..... | .... | ..... | ..... | ..... | ..... | 3.30 | ... | .... | ..... | 100 |
| Iron Silver, Colo | ..... | ..... | 3.00 | .... | ..... | ..... | ..... | ..... | 2.80 | ..... | ..... | ..... | 200 |
| Leadville C., Colo | ... | ..... | ..... | ... | .42 | .40 | ..... | ..... | ..... | ..... | .... | ..... | 800 |
| Little Chief, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Little Pittsburg, Colo | .29 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 100 |
| Martin White, Nev | .... | ..... | 1 90 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1.85 | .... | 1,000 |
| Mono, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Moulton, Mont | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Navajo, Nev | 1.40 | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 300 |
| North Belle Isle, Nev | ... | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 11 50 | ..... | 100 |
| Ontario, Ut | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 200 |
| Ophir, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 8 75 | ..... | .... | ... | 200 |
| Plymouth, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Quicksilver Pref., Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| " Com., Cal | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Robinson Cons., Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Savage, Nev | 2.85 | ..... | ..... | ..... | 9 25 | ... | 9.13 | .... | 9.00 | ..... | 8.37 | ... | 700 |
| Sierra Nevada, Nev | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4 50 | ..... | ..... | ..... | 3 0 |
| Silver King, Ariz | .... | ..... | 5.75 | 5.50 | ..... | .. | ..... | .... | 6.25 | 6 00 | 6 2 | 6.13 | 270 |
| Standard, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Stormont, Ut | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Surinam, D. G. | 3.05 | ..... | ..... | ... | 3.60 | 3 55 | ..... | ..... | ..... | ..... | 3.65 | 3 60 | 500 |
| Yellow Jacket, Nev | ..... | ..... | 5.75 | .... | 7 50 | ..... | 6.88 | ..... | 6.00 | ..... | .... | ... | 500 |

## NON-DIVIDEND-PAYING MINES.

| NAME AND LOCATION OF COMPANY. | Oct. 15. | | Oct. 17. | | Oct 18. | | Oct. 19. | | Oct. 20. | | Oct. 21. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| Alta, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Amador, Cal | 1.25 | ..... | 1 25 | 1.20 | 1.20 | ... | 1.25 | 1.20 | 1.30 | 1.25 | 1.30 | ... | 2,400 |
| Am. Flag, Colo | .07 | .06 | 07 | 06 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,200 |
| Barcelona, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bechtel Con., Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Best & B'cher Nev | ..... | ..... | 7.00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 7.13 | ..... | 200 |
| Big Pittsb'g, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Brunswick | 1.60 | ..... | 1 60 | 1.55 | 1.60 | ..... | ..... | ..... | 1.60 | ..... | 1 60 | ..... | 4,100 |
| Bullion, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Cashier | .52 | .42 | .51 | .48 | .48 | ..... | .51 | .48 | ..... | ..... | ..... | ..... | 14,000 |
| Castle Creek, Id | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Central Ariz., Ariz | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Columbia & Beaver | ..... | ..... | 2 00 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 500 |
| Con. Imperial | ..... | ..... | 2.20 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2.10 | ..... | 900 |
| Con. Pacific | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 25 | ..... | ..... | ..... | 100 |
| Durango, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Eastern Oregon | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| El Cristo, U. S. Col | 2.15 | 1.75 | 2.00 | ..... | 2.05 | 1.95 | 2.10 | 2.00 | 2.10 | ..... | 2.05 | ..... | 1,540 |
| Found Treasure | ... | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2.15 | 2.10 | 200 |
| Hector | ..... | ..... | 47 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 100 |
| Julia, Nev | .50 | ..... | ..... | ..... | .60 | ..... | .70 | ..... | ..... | ..... | ..... | ..... | 400 |
| Kossuth | ..... | ..... | ..... | ..... | .11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 200 |
| Lacrosse, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Mexican, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 4.50 | ..... | ..... | ..... | 275 |
| Middle Bar, Cal | .38 | .37 | .37 | .... | .38 | .37 | .40 | .39 | .40 | ..... | .40 | ..... | 10,000 |
| Monitor | 17 | .15 | .18 | ..... | .17 | ..... | .18 | ..... | .18 | .17 | .18 | ..... | 5,400 |
| New Pittsb'g, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| North Star Co., Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| N. Horn-Silv'r, Ut | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oneida Chief | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Pri'nt'l&Mil'r, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Phœnix of Arkan's | 1.70 | 1.65 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 800 |
| Phœnix of Arizona | ... | ..... | ..... | ..... | 1.05 | 1.00 | 1.15 | 1.00 | 1 05 | 1.00 | 1.00 | ..... | 2,800 |
| Potosi | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 6 00 | ..... | ..... | ..... | 100 |
| Rappahann'k, Va | .17 | .16 | .17 | ... | .17 | .. | .20 | .17 | .18 | ..... | ..... | ..... | 9,600 |
| Red Elephant, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Renfrew, N. S | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Saint Kevin, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| San Sebastian | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Santiago, U. S. Col | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Security, Colo | 1.50 | 1.38 | 2 00 | 1.50 | 1.75 | 1 50 | 2.00 | 1.25 | 2.13 | 1 63 | 2.00 | 1.62 | 11,300 |
| Silver Cliff, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Silver Leaf | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Silver Queen, Ariz | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Stanislaus, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| State Line, Nev. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| " Nos. 2 & 3 Nev. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sutro Tunnel, Nev. | .35 | .31 | .38 | .34 | .37 | .35 | .40 | .37 | .38 | .37 | .38 | .37 | 55,000 |
| Taylor Plumas, Cal | ... | ..... | ..... | ..... | .03 | ..... | ..... | ..... | 1.05 | ..... | ..... | ..... | 300 |
| Tioga | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Tornado | ..... | ..... | 1.05 | 1.00 | 1.00 | ... | 1.05 | ..... | ..... | ..... | 1 05 | ..... | 1,700 |
| Union Cons., Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3.75 | ..... | ..... | ..... | 200 |

*Dealt in at the New York Stock Exchange. Unlisted Securities.

# BOSTON MINING STOCK QUOTATIONS.

| NAME OF COMPANY. | Oct. 14. | | Oct. 15. | | Oct. 17. | | Oct. 18. | | Oct. 19. | | Oct 20. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| Atlantic, Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bodie, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bonanza D | ..... | ..... | .95 | ..... | ..... | ..... | .90 | ..... | ..... | ..... | .87½ | .80 | 900 |
| Boston & Mont., Mont | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Breece, Colo | .45 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 100 |
| Calumet & Hecla, Mich | 194 | ..... | 192 | ..... | 194 | ..... | ..... | ..... | 190 | ..... | ..... | ..... | 18 |
| Catalpa, Colo | 26 | ..... | ..... | ..... | ..... | ..... | .26 | ..... | ..... | ..... | .26 | ..... | 1,300 |
| Central, Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Chrysolite, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Con. Virginia, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Dunkin, Colo | .98 | ..... | 1.00 | 97½ | ..... | ..... | 1.05 | 1 00 | 1.05 | ..... | 1.07 | ..... | 1,875 |
| Enterprise | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Eureka, Nev | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Franklin, Mich | 10.00 | ..... | 10.00 | ..... | 11.00 | 10.00 | ..... | ..... | 10.50 | 10.00 | ..... | ..... | 409 |
| Freeland, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Honorine, Utah | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Ironton Iron Co., Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Little Chief | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .30 | ..... | ..... | ..... | 100 |
| Napa, Cal | 1.00 | ..... | ..... | ..... | 1½ | ..... | ..... | ..... | 1½ | ..... | ..... | ..... | 300 |
| Osceola, Mich | 24.00 | ..... | 22 00 | 20.00 | 20.50 | 17.50 | 17.00 | ..... | 19.00 | ..... | 18 00 | 17.00 | 1,530 |
| Pewabic, Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Quincy, Mich | ..... | ..... | ..... | ..... | 47.00 | ..... | ..... | ..... | 47.00 | ..... | ..... | ..... | 55 |
| Robinson, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Silver King, Ariz | ..... | ..... | ..... | ..... | 5.75 | ..... | ..... | ..... | 5.50 | ..... | ..... | ..... | 60 |
| Standard, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Stormont, Utah | ..... | ..... | .07 | ..... | .07 | ..... | ..... | ..... | .08 | ..... | ..... | ..... | 2,100 |
| Surinam, D. G. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

| NAME OF COMPANY. | Oct. 14. | | Oct 15. | | Oct 17. | | Oct. 18. | | Oct. 19. | | Oct. 20. | | SALES. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | |
| Abington | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Allouez, Mich | ..... | ..... | ..... | .50 | ..... | .50 | ..... | .50 | ..... | .50 | ..... | .50 | 800 |
| Arnold, Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Aztec | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .07 | ..... | 100 |
| Blue Ridge, Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bijou | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bowman Silv'r, Nev | ..... | ..... | ..... | 05 | ..... | .06 | .05 | 05 | ..... | ..... | ..... | ..... | 3,500 |
| Brunswi'k | 1 55 | ..... | ..... | ..... | ..... | ..... | ..... | 1.60 | ..... | 1.60 | ..... | ..... | 500 |
| Cashier, Colo | ..... | ..... | ..... | ..... | ..... | 48 | ..... | ..... | ..... | ..... | ..... | ..... | 300 |
| Contentment | .05 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 600 |
| Con. Pacific, Cal | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Crescent, Colo | 09 | ..... | 10 | ..... | .60 | ..... | .09 | ..... | .09 | ..... | .10 | ..... | 2,000 |
| Cusi, N. Mex | 2o | ..... | .25 | ..... | .24 | ..... | ..... | ..... | .23 | ..... | .22 | ..... | 2,100 |
| Decatur, Colo | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| El Cristo | ..... | ..... | 2.15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 10 |
| Humboldt | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Huron, Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Mono, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| National, Mich | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oriental & M., Nev | .12 | ..... | ..... | .13 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 700 |
| Phœnix, Ariz | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Rappahannock, Va | .17 | ..... | .17 | ..... | .17 | ..... | .16 | ..... | .17 | ..... | .18 | ..... | 2,900 |
| Security, Colo | 1.50 | ..... | 1.00 | ..... | 1.50 | ..... | 2.00 | 1 75 | 1 50 | ..... | ..... | ..... | 1,300 |
| South Side | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sutro Tunnel, Nev. | .34 | ..... | 34 | ..... | 31 | ..... | .36 | ..... | .36 | ..... | .38 | ..... | 2,400 |
| Tamarack | ... | ..... | 98.00 | ... | 100 | 98 50 | ... | ..... | ..... | ..... | ..... | ..... | 103 |
| Taylor Plumas, Cal | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

New York: Dividend shares sold, 15,655. Non-dividend shares sold, 123,335. Total New York, 138,990.
Boston: Dividend shares sold, 8,807. Non-dividend shares sold, 17,313. Total Boston, 26,120.

# COAL STOCKS.

| NAME OF COMPANY. | Par value of shares. | Oct. 15. | | Oct. 17. | | Oct. 18. | | Oct. 19. | | Oct. 20. | | Oct. 21. | | Sales. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | H. | L. | |
| Barclay Coal | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Cameron Coal | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Ches. & O. RR | 100 | ..... | ..... | 5 | ..... | ..... | ..... | 5 | 4¾ | ..... | ..... | 5 | ..... | 442 |
| *Chic. & Ind. Coal RR | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 40 | ..... | 100 |
| Do. pref | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 87 | ..... | 100 |
| Col. & Hocking Coal | 100 | ..... | ..... | ..... | ..... | 27½ | ..... | ..... | ..... | 27¾ | 24⅝ | 28⅛ | 27⅛ | 2,565 |
| Col., C. & I | 100 | 34 | 31½ | 33½ | 31 | 32¾ | 32 | 33 | 31¾ | 33¼ | 31¾ | 33¼ | 32⅛ | 4,295 |
| Consol. Coal | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 22 | ..... | ..... | ..... | 100 |
| Cumb. C. & I | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Del. & H. C | 100 | 98⅝ | ..... | 98 | 97⅜ | 98 | ..... | 98½ | 97⅛ | 99¼ | 98½ | 99¼ | 99 | 3,442 |
| D., L. & W. RR | 50 | 124¼ | 123⅜ | 124⅛ | 123¼ | 124¾ | 123¾ | 125⅛ | 124¼ | 126½ | 124¼ | 126⅞ | 125⅝ | 95,295 |
| Elk Lick Coal Co | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Hocking Valley | 100 | 21½ | ..... | 22 | 20 | 22 | 21¼ | 22½ | ..... | 24¼ | 23 | 24⅝ | 23½ | 3,799 |
| Lehigh C. & N. † | 50 | 46¼ | ..... | 46¼ | ..... | 47 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 261 |
| Lehigh Valley RR. † | 50 | 54¾ | ..... | 54⅞ | 54⅝ | 54⅞ | ..... | 54⅞ | 54¾ | 54¾ | ..... | ..... | ..... | 560 |
| L. & W. C. & I. Co | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Marshall Con. Coal | 100 | ... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Maryland Coal | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 13 | ..... | ..... | ..... | 200 |
| Montauk Coal | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Morris & Essex | 50 | 135 | ..... | 137 | 136⅞ | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 320 |
| New Central Coal | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| N. J. C. RR | 100 | 73 | 70¼ | 71¾ | 69¾ | 72 | 71½ | 72½ | 71½ | 73⅞ | 71 | 74 | 73¼ | 22,075 |
| N. Y. & S. Coal | 50 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| N. Y., Susq. & Western | 100 | 9 | ... | 8⅜ | ..... | ..... | ..... | 9 | ..... | ..... | ..... | 9¼ | ..... | 425 |
| Do. pref | 100 | 27 | 26 | 26½ | 25 | 26½ | 26¼ | ..... | ..... | 27 | 2.¼ | 28½ | 27½ | 2,560 |
| N. Y. & Perry C. & I | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Norfolk & Western R R | 100 | 13⅝ | ... | 14 | 13 | 13½ | ..... | ..... | ..... | 14 | ..... | 14⅛ | ..... | 800 |
| Do. pref | 100 | 36 | 34½ | 36½ | 34¾ | 37 | 36⅛ | 37⅛ | 36⅝ | 38⅛ | 36⅞ | 39¼ | 38¾ | 3,947 |
| Penn. Coal | 50 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Penn. RR. † | 50 | 54⅜ | 54 | 54⅛ | 54⅛ | 54¾ | 54⅛ | 55⅛ | 55 | 56 | 55⅝ | ..... | ..... | 12,925 |
| Ph. & R. RR. ** | 50 | 62 | 59¾ | 60⅞ | 59⅝ | 61⅝ | 59⅛ | 61⅝ | 60½ | 61⅝ | 59⅞ | 62 | 61⅛ | 675,490 |
| Spring Mountain | 50 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Tennessee C. & I. Co | 100 | 23½ | ... | 23¾ | 23⅝ | 24¼ | ..... | 24 | ..... | 24¾ | ..... | 26 | ..... | 1,600 |
| Westmoreland Coal † | 50 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

** Of the sales of this stock, 119,719 were in Philadelphia, and 555,780 in New York.
† The quotations for these stocks are not percentage, but actual price.
Dealt in at the New York Stock Exchange, Unlisted Securities.

Total sales, 831,310.

## San Francisco Mining Stock Quotations.

| COMPANY. | Closing Quotations. Oct. 14. | Oct. 15. | Oct. 17. | Oct. 18. | Oct. 19. | Oct. 20. | Oct. 21.* |
|---|---|---|---|---|---|---|---|
| Alpha | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Alta | 2⅞ | 2 2-5 | 2¾ | 3¼ | 3⅛ | 3 | ..... |
| Argenta | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Belcher | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Belle Isle | 4-5 | 4 5 | 1 | 1 | .90 | 90 | ..... |
| Best & Bel. | 6¼ | 6⅝ | 7⅛ | 7¼ | 6⅞ | 6⅞ | ..... |
| Bodie | 2⅛ | 2¼ | 2½ | 2½ | 2 | 2 | ..... |
| Bulwer | 1 | 1 1-10 | 1⅛ | .95 | 1 | 1 | ..... |
| Challar | 5 | 5⅛ | 5¼ | 5½ | 5⅝ | 5½ | ..... |
| Com'nwith | ..... | ..... | ..... | ..... | 2⅜ | 2¾ | ..... |
| Con. C. & V. | 16⅛ | 16⅝ | 17 | 17½ | 17½ | 16⅞ | ..... |
| Con. Pac. | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Crown Pt. | 9 | 9⅛ | 10⅜ | 12⅝ | 11 | 12½ | ..... |
| Eureka C. | 6⅞ | 6⅞ | 6½ | 6⅞ | 6¾ | 6¾ | ..... |
| Gould & C. | 4⅞ | 5 | 5½ | 5⅝ | 5 | 4¾ | ..... |
| Hale & N. | 4 | 4¼ | 4⅛ | 4¼ | 4⅛ | 5⅛ | ..... |
| M. White | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Mexican | 4¼ | 4 3-10 | 4⅝ | 4¾ | 4⅝ | 4½ | ..... |
| Mono | 1⅝ | 1.55 | 2¼ | 2 | 1⅞ | 1⅞ | ..... |
| Mt. Diablo | 4¼ | ..... | ..... | ..... | 4¼ | 4¼ | ..... |
| Navajo | 1¼ | 1⅛ | 1⅛ | 1¼ | 1⅛ | 1⅛ | ..... |
| Nev. Queen | 5 | 4.95 | 5⅜ | 5¼ | 5⅛ | 5⅛ | ..... |
| N. Belle I | 10 | 10¼ | 10⅜ | 10⅜ | 11 | 11 | ..... |
| Ophir | 7⅝ | 7⅝ | 8¼ | 8⅜ | 8¼ | 8⅛ | ..... |
| Potosi | 5¼ | 5⅜ | 5½ | 6 | 5⅜ | 6 | ..... |
| Savage | 7¾ | 8 | 8½ | 8½ | 8½ | 8⅛ | ..... |
| Scorpion | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sierra Nev. | 4⅜ | 4¼ | 4½ | 4⅜ | 4⅝ | 4½ | ..... |
| Sutro Tun. | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Tip Top | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Union Con. | 3½ | 3 2-5 | 3⅝ | 3¾ | 3⅝ | 3⅝ | ..... |
| Utah | 1¾ | 1 4-5 | 1¾ | 2 | 1¾ | 1¾ | ..... |
| Yellow Jkt. | 5⅛ | 5⅝ | 6 | 6⅜ | 6⅛ | 5⅛ | ..... |

* No quotations.

a large and steady consumptive demand, and that it is only a question of time, therefore, when buyers will have to visit sellers more frequently, and for this reason holders don't show much anxiety on the subject. The coke muddle still continues. Either a strike or a satisfactory settement can't be put off much longer. Mr. Carnegie and Mr. Frick's arrival in Pittsburg is looked for with a good deal of interest. What arrangement will be made in the future can not as yet be determined. The ruling prices will be found in our weekly register of current quotations.

SALES SINCE OUR LAST REPORT.

| | |
|---|---|
| *Coal and Coke Smelted Lake Ore.* | |
| 500 Tons Neutral Mill at Furnace | 17.75 cash. |
| 500 Tons Standard Bessemer | 20.75 cash. |
| 300 Tons Wood Neutral Mill | 17.75 cash. |
| 200 Tons White and Mottled, all ore | 17.50 cash. |
| 200 Tons Gray Forge | 18.15 4 mo. |
| 350 Tons Neutral Mill | 18.25 4 mo. |
| 50 Tons Gray Forge, all ore | 20.00 4 mo. |
| 25 Tons Gray Forge | 18.00 cash. |
| 360 Tons No. 1 Mill | 18.00 cash. |
| *Coke, Native Ore.* | |
| 200 Tons Gray Forge | 17.25 cash. |
| 100 Tons Gray Forge | 17.50 cash. |
| 50 Tons Silvery | 19.00 cash. |
| 250 Tons Gray Forge | 17.75 cash. |
| 20 Tons No. 2 Foundry | 20.00 cash. |
| 20 Tons No. 2 Foundry | 19.50 cash |
| *Charcoal.* | |
| 100 Tons No. 2 Foundry | 25.50 4 mo. |
| *Steel Billets.* | |
| 400 Tons Billets | 31.75 cash. |
| *Muck Bar.* | |
| 500 Tons Good Neutral | 31.25 cash. |
| 500 Tons Good Neutral | 31.25 cash. |
| *Steel Wire Rods.* | |
| 250 Tons Imported, at Baltimore | 39.50 cash. |
| *Steel Rail Ends.* | |
| 250 Tons Heavy American Scrap | 22.00 cash |

## FINANCIAL.

New York, Friday Evening, Oct. 21.

### The Condition of Trade.

The condition of general trade throughout the country this week is neither better nor worse than it was a week ago. The rush of Fall distribution of staple textiles, manufactured metals and groceries has subsided at most of the more prominent distributing centres; but the volume of traffic still continues of generous proportions. The movement of wheat to leading interior markets is quite heavy, larger, in fact, than during recent weeks, a portion of which is due doubtless to a desire to get the wheat forward in time to take advantage of lake and canal navigation. Reports of railway earnings continue as favorable, taken together, as they were earlier in the year, and the cut rates West and Northwest, it is fair to presume, have therefore been partially offset by the increased volume of traffic. The rumored reaction in the alleged real estate boom at various western and northwestern towns and cities, is not likely to result in as much financial depression, even in case of ultimate collapse, as has been averred in various journals, except where such speculative transactions have been largely in outlying or country property, unimproved. And it must not be overlooked that a good share of these booms have been based to a very large extent on town and city lots, improved and otherwise, where little in the nature of an actual collapse is probable. Furthermore, a large proportion of the sums "tied up" in speculative real estate transactions are only "nominal" in amount, inasmuch as but a small proportion of the sums named as invested has been actually paid. There has been a good deal reported pro and con within a week concerning the condition of the pig-iron and steel rail trades. The facts appear to be that the worst that may be said concerning pig-iron is to be found in a decreased demand, and fewer orders for future delivery than are customary at this season of the year, when there have been generally very free contracts made for delivery during the ensuing twelve months. This has served to depress the tone of leading pig-iron markets somewhat, notably at New York, Philadelphia, Cincinnati, Chicago and St. Louis. At Pittsburg and at the South relatively less depression is felt, and furnaces are very active and sold ahead. Leading Lehigh furnaces, of course, are actively employed, and are likely to find ready sale for all they are willing to contract for, as the quality of their product renders them particularly desirable. It remains to be added that the volume of consumption of pig-iron, even of the hand-to mouth description commonly reported, when taken in connection with the heavy current production, is very large indeed. Yet, instead of advancing $2 per ton at least, as has been confidently looked for for five months past, pig iron gives no promise of an early advance, and there are not wanting those who talk of a decline before the spring of 1888. Anthracite coal continues in very active demand, owing primarily to the reduced supply due to the continued strike of miners in the Lehigh Valley. The Reading Company finds itself severely taxed to meet the demands made upon it, as well owing to the lack of cars as to the want of coal. Prices are higher in all directions West, and schedule rates at the East are more nearly the actual selling rate at the East than for a long time past. The arrival home of Mr. Andrew Carnegie has been made the excuse for rumors that the Connellsville coke syndicate is to be reorganized. It will be recalled that the Frick coke works, in which Mr. Carnegie has a two-thirds interest, were forced out of the coke combination last May by the order of Mr. Carnegie to pay the employés the advanced wages demanded, and that the alleged reason was Mr. Carnegie's necessity for keeping great steel mills supplied with coke in order to fulfill his contracts. The remaining coke firms have not paid the advance, and further trouble with their employés is threatened in consequence. It is pointed out that Mr. Frick's and Mr. Carnegie's interests are not identical as to coke, for the former has no interest in the Carnegie steel works. The rumored proposition is, therefore, that Mr. Frick shall join his interest (in coke production) with the other coke manufacturers and reorganize the syndicate. "The syndicate will make an agreement with the Carnegies that they use their coke for the mills, and if ever they have a surplus owing to a shut-down of the mills or from other causes the syndicate will take their coke and sell it at the market price. Also, if the Carnegies should need more coke than the Frick works supply, the syndicate will supply them coke at the price they were selling it themselves. The other proposition is that the Carnegies themselves go in the syndicate."

The financial situation generally has improved. Rates for loans on call at New York are down to 3@5 per cent, and commercial discounts range from 6 to 7 per cent, with funds relatively easy. The treasury has increased its deposits with national banks about $2,000,000 during the week. More gold has arrived. Foreign buying of stocks has been conspicuous.

### The Coal Road Stocks.

Quite general advance has taken place in the price of leading railway stocks and bonds in Wall street, and there is a good prospect of an early return flow of currency from the interior. Naturally prices of coal road shares have been favorably affected. Closing (bid) prices of leading coal road shares at recent dates were as follows:

| | Oct. 14. | Oct. 19. | Oct. 21. |
|---|---|---|---|
| Buff., Roch. & Pitts | 64 | 45 | 46 |
| Colo. Coal & Iron | 32 | 32 | 32¼ |
| Del. & Hud. Can | 97 | 98⅛ | 99¼ |
| Del., Lack. & W | 123¼ | 124⅛ | 126 |
| N. J. Cent | 62 | 71⅛ | 73¼ |
| Reading | 60⅝ | 60⅝ | 61⅝ |

### Mining Stocks.

On the whole, the week has been a satisfactory one in mining speculation. True, the volume of business transacted has been very small, but this has embraced a larger number of stocks, many of those which have been quiet for weeks showing a better demand. A greater inquiry is noted all along the line, and though the result has not helped to swell the volume of business to any great extent, still the fact is good evidence that greater interest is being taken in the course of the market, and that it only requires sure indications of the arrival of the long-expected boom to assure investors and speculators that the time is at hand when pitching-in is likely to prove profitable.

Messrs. Whitlock & Simmons inform us that the suit in which Mr. C. G. Francklyn, President of the Horn-Silver Mining Company, was arrested on the 20th inst., is in no way connected with Horn-Silver affairs. We learn that Mr. Francklyn was arrested on complaint of Sir Bache Cunard, of England, in a suit in which the defendant is accused of the wrongful conversion of $3,000,000 of the property of the plaintiff. Bail has been fixed at $500,000. As we go to press we learn that Mr. Francklyn has been unable to procure this amount.

Only one sale of the stock was made this week—one hundred shares at 90c. per share.

The meeting of the new board of directors of the Horn-Silver Mining Company was held yesterday, there were present Messrs. Francklyn, Camp, Hill, Washington and Whitlock. Mr. Washington nominated Mr. Whitlock President; Mr. Francklyn was nominated by another gentleman. We are officially advised by Mr. Simmons, of Messrs. Whitlock & Simmons, that Messrs. Washington and Whitlock protested in a very earnest manner against the election of Mr. C. G. Francklyn as president, in view of the fact that he had been president during the previous years, and of the manner in which the affairs of the company had been conducted, particularly in regard to the large sum of money ($650,000) of which no account would be given by the management. They considered it highly improper that Mr. Francklyn should be again elected. But in spite of this Mr. C. G. Francklyn was elected by a vote of three to two. A motion was passed that a report should be prepared as to the affairs of the company and submitted to the directors at their next meeting, to be held in November. Messrs. Whitlock & Washington to-day were at the office of the company with the intention of beginning an investigation of its affairs. The present officers of the company are Charles G. Francklyn, President; Theo. C. Camp, Vice-President; H. C. Hill, Treasurer; W. F. Van Pelt, Secretary and Assistant Treasurer.

At a meeting of the Taylor-Plumas Mining and Milling Company, held on the 17th inst., the following officers were elected: Francis B. Forster, President; L. L. Levey, Secretary; E. P. Phillips, Treasurer. In an interview with Mr. F. B. Forster, to-day, he stated that the former management of the company has been such as to run it in debt. The present management will try first to pay the debts and see what there really is in the mine by working it thoroughly. The stock, in the past, has sold as high as 56 cents, and has been down as low as one cent. When it sold at that price the former management levied an assessment of 5 cents a share, to which some stockholders objected and issued an injunction; but since the new management came in, the injunction has been dissolved and the assessment of 5 cents rescinded, but a new assessment of 2 cents has been levied, to which all the stockholders, or the greater portion of them, have assented, with the understanding, it is said, that the first dividend shall be used to repay those meeting said assessment. This money will be used for the purpose of paying off indebtedness and for the development of the property. The mine will be started up at once and put in good working order. A sale of the stock was made this week at 3c. per share.

There was much excitement and comment in the Mining Board to-day on the exposure of the Tortilita fraud in the columns of the *Herald*, which journal probably derived its cue from the article in The Engineering and Mining Journal of October 1st. It was reported yesterday that the stock would be called on the Exchange within a few days, whether approved by the Tortilita management or not. The stock was freely offered at 75 cents yesterday and one sale was actually made at 25 cents, seller sixty days. The latter, however, is no just basis for an estimate of the value of the stock, and was probably a sporadic case of selling by a disgusted purchaser who expects the stock to sell far below this figure within the period named. It has been decided by the Consolidated Stock and Petroleum Exchange to notify the company that they must call the stock or it will be stricken from the list.

Sutro Tunnel's business amounted to 55,000 shares. The price showed an upward tendency, and advanced from 34c. to 40c. The price of Consolidated California & Virginia was also higher, advancing from $16.13 to $18.13. No business was done in Challar until the end of the week, when the price ruled at from $5.38 to $5.50. Gould & Curry from $5.13 to $5.25. Hale & Norcross was quiet at $4. Ophir at $8.75. Savage was active, and advanced from $8.25@$9.25, but to-day declined again to $8.37. Sierra Nevada shows a sale at $4.50. Yellow Jacket was higher and active at from $5.75@$7.50, and declined toward the close to $6. Best & Belcher sold at from $7@$7.18. Union Consolidated at $3.75.

North Belle Isle shows but one sale, at $11.50. Navajo at $1.40. Belle Isle advanced from 78c. to $1. Found Treasure, from $2 to $2.15, and Tornado, from $1 to $1.05.

Phœnix, of Arkansas, was only dealt in on Saturday; the price ruled at from $1.65 to $1.70.

Phœnix, of Arizona, showed considerable activity toward the close of the week at from $1 to $1.15. Sales were made to-day at $1.

Holyoke showed considerable business at 9@10c.

Little was doing in Rappahannock. The price was steady at from 16@20c.

The manipulators of Security infused some life in the stock this week, and advanced it from $1.38 to $2.13, the sales amounting to 11,300 shares. Cashier was neglected, and no sales were made since Wednesday, when the price stood at from 48c. to 51c. Monitor exhibited some of its "rich ore" at the Exchange this week. The exhibition, however, did not affect the price of its stock, which was quiet, ruling at from 15c. to 18c. Breece shows a few sales at from 52c. to 55c. Dunkin, at from 95c. to $1. Iron Silver, at from $2.80 to $3. Leadville, at from 40c. to 42c., and Little Pittsburg at 29c.

Considerable activity has been displayed in Homestake, which advanced from $13 to $15. Deadwood-Terra was quiet, selling at $3. Caledonia shows sales at $1.50 to $1.55, and Iron Hill a sale at $3.30.

El Cristo has kept to its low level of about $2 a share during the week, with sales of 1560 shares. What is the matter with the mine? is asked, but no answer is given. It is pretty generally understood that Harpending, of ill fame, is being "squeezed," and is likely to be pushed entirely out of Cristo and Talento. It was long ago found that the public is afraid of a concern controlled by one with so shady a reputation as Mr. Harpending, and as it is said he has lost a good deal of money of late, the other wolves have turned on him, and will probably devour him. The mine is, no doubt, a good one, and will probably survive this "family quarrel."

Surinam was steady at from $3.55 to $3.65.

A sale of Alice is reported at 85c.

Silver King, which has been dormant for many weeks, shows sales of 270 shares, and advanced from $5.50 to $6.25.

Brunswick has been very strong during the past week. Further encouraging reports come from the mine, and affairs have assumed such a shape that the payment of dividends with the beginning of the New Year is predicted. The price was firm at from $1.55 to $1.60. Amador was active at from $1.20 to $1.30. Middle Bar from 37 to 40c. Bodie was higher, going from $1.90 to $2.50, selling to-day at $2.20. Mono declined from $1.90 to $1.80.

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As we go to press, we receive the following letter, which came too late to go in our column of correspondence:

Editor of the Engineering and Mining Journal:

Sir: Receive my congratulations upon being the first journal to throw light on the Tortilita mines that exist only upon paper and are worthless in reality. With my cordial salutations, accept my thanks for thus publishing the truth.

Attilio Giannini.